The RUBBER AGE

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VOL. 31, NO. 2 — APRIL 25, 1932

LATE NEWS of the Industry

Plan to Set Up Dictatorship to Aid the Rubber Industry is Rumored

Press Reports After Luncheon Attended by Leading Rubber Executives Remain Unconfirmed, But Some Developments Are Expected—George T. Bishop Suggested as New "Czar"

UNCONFIRMED reports of a plan to revitalize the rubber industry were given credence in the press notices on April 7 that at a luncheon meeting of leading executives in the industry and financial interests a proposal was discussed to create a "czar" or dictatorship to work out the trials which beset the rubber manufacturing business today.

George T. Bishop, director of the Goodyear Tire & Rubber Co. and president of Continental Shares Corp., whose holdings of Goodyear, Goodrich, Firestone and United States Rubber Co. stocks make it the world's largest owner of rubber securities, is being prominently mentioned for the post of "rubber czar," who would seek to bring about order in this industry as other "dictators" have stabilized various trades.

In the past two years the leading rubber companies have been confronted with heavy declines in the price of the crude rubber inventories which they hold. They have also had to face a lessening demand for automobile tires and drastic reduction in the prices for which they can sell their products. The result has been that one or two companies have been forced into receivership, while the profits on nearly all have dwindled.

In a recent attack on manufacturers for selling tires to large oil companies at prices below those quoted to retail dealers, F. A. Seiberling gave his views of the conditions facing the industry. He said the industry must promote policies which would restore to prosperity the country's fourth largest manufacturing industry. The industry, he said, had been sacrificing its fundamental relations with dealers in an effort to build up volume, regardless of price, through sales to chain stores, chain service stations and other such outlets.

Large manufacturers, however, replied that such business was essential in order to maintain a sufficient backlog of business for the efficient operation of their plants.

In view of this situation, Mr. Bishop, head of the Continental Shares Corporation, the investment company formerly sponsored by Cyrus W. Eaton, invited 32 leaders of business and finance, most of them more or less directly connected with rubber problems, to the luncheon meeting held in New York early this month.

Those in attendance at Mr. Bishop's luncheon included: Wilbur M. Baldwin, vice-president, Union Trust Co., Cleveland; Harris Creech, president, Cleveland Trust Co.; Francis B. Davis, Jr., chairman, United States Rubber Co.; Irenee du Pont, chairman of the finance committee, E. I. du Pont de Nemours & Co.; Lamont du Pont, president,

Scanning the Headlines

Rumors of the creation of a dictatorship to help solve the industry's ills are unconfirmed . . . . TIRE production increases in February, but is below 1931 figure . . . . CRUDE rubber consumption drops off in March . . . . Converting balloon tires to "doughnuts" will mean 5 millions in new machinery . . . . LITCHFIELD sees business revival in offing . . . . Industry hard hit by exchange drop . . . . Auto rim production declines . . . . Strike closes Goodyear coal mine . . . . Dealers' stocks of rubber footwear reported by Department of Commerce . . . . Depreciation in plantations reach over one billion . . . . Argentine patents puncture proof tire.

E. I. du Pont de Nemours & Co.; Harvey S. Firestone, president, Firestone Tire & Rubber Co.; A. L. Friedlander, director, Dayton Rubber Co.; Albert A. Garthwaite, vice-president, Lee Tire & Rubber Corp.; E. B. Germain, president, Dunlop Tire & Rubber Corp. of America; Frank H. Ginn, director, Union Trust Co., Cleveland; D. M. Goodrich, chairman, B. F. Goodrich Co.; Paul W. Litchfield, president, Goodyear Tire & Rubber Co.; William O'Neil, president, General Tire & Rubber Co.; Charles W. Seiberling, vice-president, Seiberling Rubber Co.; F. A. Seiberling, president, Seiberling Rubber Co., and A. L. Viles, Rubber Manufacturers Association.

The rubber industry has made one previous attempt to operate under a "czar," General Lincoln C. Andrews, former assistant secretary of the treasury, having served in that capacity with the title of director general of the Rubber Institute. Andrews was appointed in May, 1928, and served for one year when the position was abolished and the work of the Institute taken over by the Rubber Manufacturers Association.

There has been no definite decision made in the selection of Mr. Bishop, so far, and leaders in the industry have been reluctant to discuss the matter further. A second meeting which was scheduled to take place in New York, April 12, apparently did not materialize. At the time, Mr. Bishop was reported ill and unable to attend any meeting.

There is still considerable doubt as to whether the "dictator plan" will go through and comment from responsible sources has been withheld, although from unquoted authorities there have been persistent denials that the "czar" scheme will be accepted. The rubber leaders were said to favor a modified form of the dictator plan.

Consumption of Crude Rubber Fell Off Sharply During Last Month

CONSUMPTION of crude rubber by manufacturers in the United States for the month of March amounted to 27,828 long tons as compared with 30,011 long tons for February, 1932, and represents a decrease of 7.3 per cent and 15.1 per cent below March, 1931, according to statistics released by the Rubber Manufacturers Association.

The organization reports imports of crude rubber for the month of March to be 42,382 long tons, an increase of 38.7 per cent over February and 5.1 per cent above March a year ago.

The Association estimates total domestic stocks of crude rubber on hand March 31, at 334,566 long tons, which compares with February 29 stocks of 322,117. March stocks show an increase of 3.9 per cent. above February of this year and 53.6 per cent above the stocks of March 31, 1931.

The participants in the compilation report 44,190 long tons of crude rubber afloat for the United States ports on March 31 which compares with 51,728 long tons afloat on February 29, 1932, and 47,350 long tons afloat on March 31, 1931.

Production of Tires in February Show Gain, But Were Below 1931 Output

PRODUCTION of pneumatic casings for the month of February amounted to 3,871,220 units, an increase of 11.8 per cent as compared with January this year, but were 2.9 per cent below February, 1931, according to statistics released by The Rubber Manufacturers Association, Inc., recently.

The organization reports shipments of pneumatic casings for February to be 2,552,861 casings, a decrease of 21.5 per cent under January, and 25 per cent below February, 1931.

Pneumatic casings on hand February 29 amounted to 9,172,245 units, an increase of 15.9 per cent over January although 3.8 per cent below February 28, 1931.

New "Doughnut" Tires Mean Five Million Dollars in New Machinery

WITH capital reserves considerably depleted during the past few years due to over-keen competition, the rubber industry faces the probable necessity of digging up approximately $5,000,000 for new machinery to manufacture the new "doughnut" tires, according to Frank A. Seiberling, president of Seiberling Rubber Co. He bases his estimate on the readjustment brought about by the advent of the balloon tire several years ago. He added that in his opinion the changeover to the large-section tires would extend over a period of two or three years, perhaps longer, depending on conditions.

The "doughnuts" have been gaining favor quietly in the replacement trade since the first of this year; and were brought into the headlines—first, when DeSoto adopted them as optional equipment, and again when Graham Paige took the same course.

Among the tire men it is generally thought that they will replace conventional balloons because of their many advantages. In this respect, J. F. O'Shaughnessy, general manager of the tire department of U. S. Rubber, sums up their features as:

(1) They give greater riding and driving comfort because extra cushion effect reduces fatigue. The "doughnut" carries only 12 to 20 pounds of air, depending on car weight and tire size.

(2) They insure greater safety, because the large volume of air at low pressure prevents sudden deflation through puncture. The old fashioned blowout cannot occur with a super pneumatic.

(3) They increase both top speed and average speed because they permit travel at higher speeds over normally bad roads.

(4) They increase effectiveness of braking, because they provide an added grip on the road.

(5) They add an ultra modern touch of beauty by giving the car a lower and sportier appearance.

(6) They increase traction, which is so urgently needed on snow, soft ground, mud or sand. And they enable a start off slippery pavement without spinning of wheels.

(7) They lessen shocks and vibration wear and tear on the car, greatly delaying the time when body squeaks make themselves apparent, due to loosening of bolts.

Litchfield Sees the Stage Set For an Early Renewal of Business

THE Congress of the United States has an opportunity, perhaps unique in our history, to expedite or to retard the economic recovery of the nation," declared P. W. Litchfield, president of the Goodyear Tire & Rubber Co., at an address recently before 300 sales and production executives of his company.

"Its prime responsibility today is to maintain the national credit, that final bulwark of our entire business structure," he said. "It must balance the budget. It must do so in wisdom and sanity, laying the burden equitably over a wide range of articles, not concentrate it on a few. On the other hand it must proceed vigorously to cut the costs of government, so as to lessen that tax burden as far as possible.

"Washington is in a favored position among the cities

of the nation. It has not had the lay offs and the pay cuts that the rest of the country has gone through. Consequently it is difficult in Washington to realize how grave are conditions in the country as a whole.

"There was a general expectation that the turn of the year would see a turn also in business. Necessities of life were wearing out and needing to be replaced. We were consuming faster than we were producing. The stage was set for a revival of business.

"Furthermore credits were being restored and confidence was growing. The Reconstruction Finance Corporation staked the credit of the country behind the banking structure. Bank failures diminished, became lower than they had been in years. Depositors put their money back into the banks.

"The automotive industry was making a courageous effort to start the cycle of business, bringing the genius of invention and the persuasive appeal of style and comfort and price to bear, to start people buying, and through such purchases to start putting unemployed men back to work.

"That those hopes have not been realized is due, to a very large degree, to a fear that spread across the country as to what Congress was going to do in the way of taxation. Business plans were halted, projected purchases were deferred, the dollar went back into hiding. Whether business may take an upturn yet this spring, or must wait several months to see what happens, rests largely on whether the national Congress acts with decision and with sound judgment, in this present crisis."

Mr. Litchfield again emphasized that restoration of employment was necessary to business improvement, urged the spreading of work among the maximum number of persons, putting as large a number of people as possible in an earning position.

"It is better to have 100 per cent of the people working 80 per cent of the time," he declared, "than for 80 per cent of the people to be working full time and the rest having no work whatever."

Dealers' Stocks of Rubber Footwear in the United States, March 1, 1932

Department of Commerce Survey Shows an Average of 281 Pairs per Dealer—Average Drops From 1931 Figure

THE result of the survey of dealers stocks of waterproof rubber footwear as of March 1, 1932, made by the Rubber Division of the Department of Commerce, show that 17,306 dealers reported 5,036,574 pairs on hand, an average of 291.0 pairs per dealer, against 20,400 dealers with 6,109,033 pairs, or 299.5 pairs per dealer, on March 1, 1931. The number of dealers reporting stocks of each class of rubber footwear, the number of pairs reported, and the average pairs per dealer, for the United States as a whole, is shown for March 1, 1931, and March 1, 1932, in the table below:

As with the periodical surveys of dealers stocks of radio equipment and automobile tires made by the Department of Commerce in recent years, this survey was made to provide basic information contributing to trade stability. The market for rubber footwear is highly seasonal and confined mostly to the winter months; demand varies with winter weather conditions; and the market is complicated by frequent changes in design and color of ladies' gaiters to correspond with more exacting style demands. Consequently, there is always uncertainty in market conditions often leading to scarcity or surplus of supplies, either of which is an economic loss divided between manufacturers, dealers, and consumers. There is a carry-over of stocks both by dealers and manufacturers at the end of every season. The present and subsequent annual surveys will help determine the extent of the normal dealer carry-over, and enable manufacturers and dealers to judge how business, during the coming season, may be affected by the carry-over, both for individual States and the country as a whole.

Conclusions of the Survey

The stocks of waterproof rubber footwear held by dealers in the United States were appreciably lower March 1, 1932, than a year previous. That a smaller percentage of dealers reported stocks under each heading, and that average pairs per dealer were reduced for each class of footwear are facts representative of the trend, but there are also some evidences of a high mortality among small retailers, which indicate a likelihood that the total number of active retailers, or at least the number with stocks on hand this year, has been reduced as compared with a year ago.

No trade statistician has ventured a definite statement as to the number of active dealers stocking rubber footwear; the mailing list used has varied from 98,000 to 132,000 names, and consisted of 111,600 in the current survey, but it is certain that a considerable proportion of these are intermittent buyers who seldom carry stocks.

It is not possible for the Rubber Division to state the total number of dealers holding stocks of rubber footwear, but it is their opinion that the stocks reported in the surveys for 1931 and 1932 represent no less than 33 per cent of the total stocks held by dealers in each case, and the percentage probably is considerably higher.

Summary of Dealers' Stocks of Waterproof Rubber Footwear

	March 1, 1931			*March 1, 1932*		
	No. of Dealers	*No. of Pairs*	*Pairs per Dealer*	*No. of Dealers*	*No. of Pairs*	*Pairs per Dealer*
Rubber boots	15,494	535,141	34.5	12,753	396,091	31.1
Lumberman's and pacs	8,091	253,785	31.4	6,526	168,266	25.8
Heavy arctics and gaiters	12,886	585,444	45.4	10,575	420,766	39.8
Light arctics and gaiters	11,916	608,470	51.1	9,750	513,465	52.7
Style gaiters, cloth	10,562	611,884	42.1	7,985	435,829	54.6
Style gaiters, rubber	9,868	660,368	66.9	8,179	634,861	77.6
Light and heavy rubbers	17,590	2,853,941	162.2	14,883	2,342,308	157.4
	20,400	6,109,033	299.5	17,306	5,036,574*	291.0

*This total includes 124,988 pairs of waterproof rubber footwear which were not reported by class.

Some Heat Effects of Vulcanization*

SPEAKING of "Some Heat Effects of Vulcanization," Professor W. K. Lewis of the Massachusetts Institute of Technology, outlined briefly some preliminary results on the mechanism of vulcanization which he and his students have obtained. He pointed out that no theory of the mechanism of vulcanization yet presented is adequate to explain all the facts that have been obtained. The most striking of the facts is that for highly accelerated mixes containing varying amounts of initial free sulphur, the disappearance of free sulphur follows the rate law of a first order chemical reaction, being monomolecular with respect to the free sulphur. However, in the case of mixes containing a poor accelerator, or none at all, the rate of disappearance of free sulphur is constant or even increases with the time of cure. The rate finally decreases again as the free sulphur approaches exhaustion, so that the complete sulphur-time cure is often S shaped. In all cases, the initial rate is inversely proportional to the square root of the initial free sulphur.

This behavior cannot be explained on the basis of the limited solubility of the sulphur in the rubber since the rate of the reaction should be independent of the amount of free sulphur present while actually it is inversely proportional to the square root of the free sulphur, at least in the early stages of cure.

If vulcanization is caused by an activated form of sulphur, the effect of accelerators should be merely to increase the availability of this form of sulphur for the rubber and would have no effect on the shape of the sulphur combining curve. The linear or S shaped course of the combined sulphur-time curves cannot be laid to autocatalysis since it was found that the higher the initial free sulphur for any given type of mix the lower was the specific reaction rate at any time, in spite of the fact that the combined sulphur for a high sulphur mix was considerably greater than that of a corresponding low sulphur mix for the same time of cure.

The depolymerizing action of heat on the rubber has, in the past, been used to explain the increase in the rate of sulphur combination with the rubber, the theory being that the longer the rubber is under heat the more it is broken down and the faster it tends to react. As a test of this theory, Professor Lewis showed data on the rate of cure of rubber which had been heated at curing temperature from times varying from 20 to 300 minutes before the sulphur was incorporated. In every case, the effect of preheat of the rubber was to slow down the vulcanization. In other words, for a given time of cure, the preheated rubber combined with less sulphur than a corresponding cure made with unpreheated rubber. This effect is diametrically opposite that predicted by the depolymerization theory. Moreover, at the same combined sulphur, the tensile strengths of the preheated and unpreheated cures were identical, showing that, within the experimental error, the preheat had no effect on the ultimate tensile strength of the vulcanizate.

As to the cause of the slowing down of the vulcanization reaction by preheating, it was suggested that the preheating may have developed an anti-catalyst or anti-accelerator, inhibiting the vulcanization reaction in the early stages of cure but, once the sulphur addition finally started, its rate became identical with that of the unpreheated sample. This effect is entirely similar to the effect of anti-oxidants in inhibiting the oxidation of rubber, where the anti-oxidants merely lengthen the induction period of the reaction but have no effect on its ultimate rate.

*Abstract of a paper presented by Professor W. K. Lewis, before the Boston Group, Rubber Division, A. C. S., April 7, 1932.

Sweden's Tire Market

THE outstanding feature of the tire market in Sweden during 1931 was the rapid progress made by the leading domestic manufacturer, Svenska Gummifabriks Aktb., Gislaved, which is owned by the powerful Swedish Cooperation Union. According to reports of the Department of Commerce, during the last three years the production of Gislaved tires has been nearly tripled, and it is estimated for 1931 at over 50,000 casings, as compared with only about 18,000 in 1929. The second Swedish manufacturer, Tralleborgs Gummifabriks Aktb., Tralleborg, has expanded its production much more slowly, but nevertheless its 1931 output is believed to have been in the neighborhood of 10,000 casings—making a total domestic production of some 60,000 casings for that year.

The depreciation of the exchange value of the Swedish crown with respect to gold currencies since the abandonment of the gold standard in September 1931 has improved enormously the competitive position of the local tire industry. At the low point recorded early in December, this depreciation amounted to over 30 per cent and it is still approximately 28 per cent. The domestic producers are now able to quote prices that are entirely beyond the reach of manufacturers in countries whose currencies are still on the gold basis. Furthermore, Swedish-made tires, from the standpoint of quality, enjoy a good reputation with users. The only important tire exporting nation that is not confronted with the exchange problem just referred to is Great Britain, since the pound sterling and the Swedish crown have both depreciated to approximately the same extent. Sales of British tires, however, are not believed to have increased noticeably during the past few months.

With regard to the prospects for future business in Sweden it is exceedingly difficult to make any accurate forecast. At the end of 1930 the total registration of motor vehicles of all kinds was 145,258 of which passenger cars represented 103,664 and trucks 38,071. New reregistrations during 1931 reached 11,847 for passenger cars and 7,651 for trucks. However, with general conditions as they are, sales of motor vehicles are sure to be greatly reduced, and the total for the year 1932 will hardly exceed 12,000 to 14,000 units of all kinds. Furthermore, it may reasonably be expected that owners will use their cars to a less extent than formerly. Not only have incomes been reduced by the depression, but also the cost of operating a motor car will be higher, for increased taxes on automobiles, gasoline, and tires are planned, in order to provide additional revenue needed by the Government to balance its budget. These will inevitably have the effect of reducing the consumption of tires. One of the few encouraging factors in the outlook for the future lies in the fact that Swedes spend their money freely, even in bad times, and so they will probably be loath to give up the use of motor cars to which they have become accustomed.

Safety Gates for Mills

VAN CLEEF BROTHERS, rubber manufacturers of Chicago, Ill., have recently installed a simple safety device on their large mills to protect passers-by from possible injury. The device consists of a couple of balanced gates. When the operator on the front of the mill is working with stock, he raises the gate in front of him and this lowers the gate in the back. This prevents workers who happen to be passing the mill from getting their hands or clothing engaged in the rapidly moving rolls.

Barriers of this type are effective in preventing accidents and are being recommended for rubber factories by the National Safety Council.

Mold Wash Concentrate

MOLD wash concentrate, made of wood extract and manufactured by the Wood Extract Company, 34 Hartwell Street, New Brunswick, N. J., is being used successfully by a number of rubber manufacturing companies. The material is used in various dilutions, but the manufacturers recommend one part of concentrate to six of water. The wash should be used similar to a soap solution and should be applied to hot molds. The hot mold will not destroy the effect of the wash.

LATEX APPLICATIONS*

Two Papers Reviewing the Many Characteristics of Latex and Its Uses in Various Forms—Processes of Concentrating Latex—New Uses Suggested.

Concentration and Compounding of Latex for Industrial Use

By Dr. D. F. Twiss

ALTHOUGH the application of latex to rubber manufactures appears to be essentially a modern phase of the industry, the reason for this largely is that only of relative recent years have supplies of latex been available outside the plantation areas. The technical use of latex, however, received consideration at a surprisingly early date in the development of the rubber industry. Not only did Thomas Hancock (Brit. Pat. 5045, 1924, etc.) and Charles Goodyear (in his "Gum Elastic") describe methods using rubber latex, but Samuel Peal patented the rubber-proofing of textiles with latex still earlier (Brit. Pat. 1801, 1791).

General Advantages of Latex

Some of the advantages of latex are obvious. Its fluid condition renders it capable of use instead of rubber solution with elimination of expensive solvents and the need for mastication. For the same reason latex can easily be rendered uniform in large bulk so as to minimize variability in factory processing; the importation of ingredients is facilitated so that compounding is possible without heavy machinery; the latex, whether compounded or otherwise, lends itself very conveniently to such operations as moulding, dipping or spreading.

Concentrated Latex

Of more recent years the additional advantages of concentrated latex have received appreciation. The use of concentrated latex reduces the proportion of water to be handled relative to rubber so that transport is cheapened per pound of rubber; storage space is economised and the proportion of water finally to be removed by evaporation, or by other means, is reduced.

Methods of Concentration

Three distinct types of procedure are available for the concentration of latex based respectively on the three principles of (1) filtration, (2) evaporation, (3) creaming.

Various modifications of the *filtration process*, most of them, however, involving the final formation of a coherent rubber deposit on the surface of a shaped filtering medium, have been described from the days of Thomas Hancock (e.g. T. Hancock, Brit. Pat. 5970, 1830, describes the use of shapes or formes made of plaster of Paris), and articles such as automobile tubes have more recently been manufactured in this way. This aspect of the matter, however, does not fall strictly within the scope of the present paper. Filtration processes for mere concentration have not made any great advance.

The *evaporation* method has been described in various forms. In most of these the latex containing a suitable protective colloid or colloids (introduced as such—e.g. a potash soap—or formed in the latex from its protein and "resinous" constituents by heating with a small proportion of potassium hydroxide) is subjected to evaporation with the aid of heat.

The *creaming* methods involve the utilization of the natural tendency of the rubber globules to rise in the heavier aqueous serum. Normally, such creaming is very slow, so that means are necessary to expedite it. Various devices are possible. The specific gravity of the serum can be increased, but this has the disadvantage of introducing foreign dissolved substances. The effective specific gravity of the rubber can be decreased, but whether this be effected by dissolving a liquid of lower density in the globules or by associating small gas bubbles with them, there is the disadvantage that the volume of the rubber phase is increased so that the volume-concentration of rubber in the final cream is decreased; the device also is not easy of application.

An alternative device for expediting creaming of latex is the addition of suitable protective colloids such as gum tragacanth, alginates, gelatin, etc. This form of procedure appears to be analogous with the long-known use of isinglass for the clearing of wine, but the resulting "sedimentation" is upwards; it can give rise to a concentrated latex cream containing up to about 60 per cent of rubber. The process is easily applied, but the additional colloidal material is disadvantageous both on account of cost and of the influence of its presence on the behavior of the latex in subsequent manufacturing operations and of the manufactured article in use.

The creaming of latex under the influence of *centrifugal action* whereby in effect the gravitational force is increased, has long been realized as a possibility, but has only become a practical proposition of recent years. The process invented by W. L. Utermark and operated on the Malayan Plantations of the Dunlop Rubber Company, makes use of a modified form of milk centrifugal separator. It is customary to add a small proportion of ammonia gas to the latex before centrifuging, and afterwards to increase this to a total of 0.5 per cent NH_3 (on the latex cream) for preservative purposes. The rate of flow through the centrifuge and the speed of the latter are so adjusted that the approximately equal volumes of "cream" containing 60 per cent of rubber and of "skimmed latex" are obtained. The former constitutes "Dunlop 60 per cent latex"; it is a mobile liquid of the appearance and fluidity of rich milk. The centrifugal process today is the method producing the largest

*The above two papers are reprinted from Vol. 7, No. 4, of the *Transactions of the Institution of the Rubber Industry* with acknowledgements. They were presented by the authors at section meetings of the Institution in October, 1931.

bulk of concentrated latex, the amount being well on the way to a million gallons per year.

Characteristics of Dunlop Concentrate

The following is a statement of analytical results obtained respectively with the "Dunlop 60 per cent Latex" and the skimmed latex which is left.

	Dunlop 60% Latex	*Skimmed Latex*
Total Solids	61.5%	11.0
Dry Rubber Content (by coagulation)	60.0%	7.1
On Total Solids		
Acetone Extract	3.2	10.3
Ash	0.37	2.2
Water-Soluble	0.23	35.6
Nitrogen	0.36	2.3

Uniformity of quality is ensured by bulking the enriched cream in tanks of total capacity of 17,000 gallons or more.

This centrifugal cream has not only the advantage of fluidity, but also as will be seen from the above figures, contains a reduced proportion of non-caoutchouc constituents; this is a desirable feature of considerable importance, because in most methods of manufacture employing ordinary latex the whole or almost the whole of the non-rubber constituents from the latex are included in the finished article where their presence is frequently detrimental.*

The saline or other impurities of ordinary latex, for instance, may lead to porosity in vulcanization and to undesirable hygroscopicity in the finished product, and to poor electrical qualities. It is possibly somewhat surprising, but it is nevertheless a fact that the ageing qualities of the final manufactured rubber product are not impaired by the elimination of these serum solids. The centrifugal process also incidentally removes all suspended foreign particles such as dirt, so that it not only concentrates the latex but also subjects it to a two-fold refining action. No artificial preservative is used other than ammonia, and this, on account of its volatility, disappears during the final stages of manufacture, or sooner if desired.

Latex Processes

Processes for the application of latex are so numerous and varied that it is convenient to group them according to the particular aspect of latex on which each is based.

Latex may be regarded as (*a*) a fluid dispersion, (*b*) a dispersion of electrically charged particles, and (*c*) a dispersion of particles of a colloid material.

As will be seen from the following classification of typical fields of application of latex, which during the past four or five years have been the subject of technical research, most of the applications fall primarily into group (*a*):—concentration of latex (*a*); dipping processes (*a*) and (*b*); spraying processes (*a*); spreading processes (*a*); extrusion processes (*a*); filtration processes (*a*); moulding processes (*a*); electrodeposition and "ionic deposition" processes (*b*); acid latex processes (*b*); compounding processes (*a*) and (*c*); "wrinkling" processes (*c*).

In the following discussion these three distinct types of process are dealt with collectively and only as far as they concern compounding.

Compounding

The possible methods of procedure for the compounding of latex fall essentially into two groups.

(*a*) *Compounding Latex for Dry Manufacturing Processes.* In one group in which the compounding ingredients may be mixed into the latex in their normal state or after being wetted, the latex coagulates during the compounding process or subsequently; the compounded coagulum is then dried, milled and finally moulded and vulcanized.

The main advantages of this type of procedure are (1) the elimination of mixing on the rolls; (2) the possibility of introducing larger proportions of bulky fillers than are possible in dry mixing; (3) a reduction of the final period of mastication or milling on power rolls.

The production of compounded rubber in this way was described at a relatively early date by various inventors, even Thomas Hancock describing such a process (e.g. Thomas Hancock, Brit. Pat. 5970, Aug. 5th, 1930).

However, by effecting very complete dispersion of the carbon black or other ingredients (with the aid of protective colloids or dispersing agents, particularly ammonium salts of fatty acids) before introducing them into the latex, it is possible, without need for milling, to obtain uniform latex-mixtures which are convertible almost spontaneously into loose crumb-like masses capable of rapid drying. The dry crumb, doubtless in part because of the presence of the fatty acids remaining after the loss of ammonia during drying, is easily moulded or can be reduced to an extrudible mass by a few minutes' treatment on warming-up rollers (Dunlop Rubber Co., Brit. Pat. 327,541, 1929).

It is noteworthy that carbon black in any latex mixing fails to exert its full reinforcing effect until after brief dry mastication. Another interesting observation is that, judged by abrasion resistance, such high proportions of carbon black as 100 per cent on the rubber have little advantage, if any, over the customary 45 per cent or so of the tire manufacturer. In times of normal prices, however, the possibility of use of such high proportions of carbon black might have an important economic aspect.

(*b*) *Compounding Latex for Wet Manufacturing Processes.* Latex naturally offers especial economic and other advantages when it is applied so as to displace the use of rubber solutions with their need for expensive organic solvents, relatively low rubber content and rubber weakened by mechanical working.

In the compounding of latex for manufacture of artcles by such operations as dipping, spreading, spraying, or wet-moulding, the compounding ingredients are again introduced by way of the continuous aqueous phase, and the entire absence of milling operations permits the use of the most active accelerators without the possibility of scorching.

Reasonable proportions of amorphous water-soluble substances, free from coagulant effect, e.g. albumin, viscose, casein (ammoniacal), gelatin or glue, can be introduced in the form of aqueous solution into latex with satisfactory results. Care, however, must be taken to avoid an excessive proportion if substantial homogeneity in the product is desired.

Fatty acids, e.g. oleic or stearic acid, are conveniently introduced into latex in the form of solutions in aqueous ammonia, but most organic fillers, e.g. rubber substitute or rubber reclaim, are conveniently first converted into artificial aqueous dispersions which can then be blended with the latex in any desired proportion. Powders and oils generally are introduced best as aqueous—not necessarily colloidal—dispersions.

In the selection of compounding ingredients for latex, it is important to avoid all such as are likely to contain considerable proportions of constituents capable of acting as coagulants. Antimony sulphides and iron oxides are typical. In the case of many other compounding ingredients, however, such as whiting, titanium white, lithopone, etc., it is a wise precaution to prevent the unofficial introduction of coagulant impurities into latex by heating them for a short time with a dilute solution of sodium carbonate or potassium carbonate. An interesting alternative method for obviating this difficulty is initially to effect flocculation of the latex to a coarser rubber dispersion free from coherent coagulum by the addition of a proportion of suitable coagulant, e.g. of a salt of a polyvalent metal. Such flocculated latex, which may be described as a rubber

*Possibly in one set of circumstances only would the presence of water-soluble non-caoutchouc substances constitute an advantage, viz., where the temperature of storage is likely for a considerable period to fall below the normal freezing point of the serum of the latex. Freezing of the serum is likely to lead to coagulation of the rubber. It is possible to introduce water-soluble substances to combat this mischance. Particularly suitable additions are such substances as methyl alcohol or acetone, which on account of their low molecular weight have a considerable depressive effect on the freezing point of the serum; also, on account of their volatility they disappear during evaporation of the latex, leaving residual rubber of unimpaired purity. For example, the addition of 10 c.c. of methyl alcohol mixed with 0.5 gm. oleic acid and 1.6 gm. of ammonia (NH_3) in a little water lowered the maximum freezing point of 163 c.c. of Dunlop concentrate from a very little below 0 °C. to —8.5 °C.

sludge, can be compounded and, like ordinary latex, is very convenient for use in some directions.

The wetting of the powders in this pre-treatment is no disadvantage, because it is desirable to introduce *all* solid or liquid compounding ingredients into latex in the form of a dispersion in water. Neglect of this precaution with powders may lead to local formation of coagulated clots of rubber around pockets of dry powder, due to the mechanical absorption of water by the latter. Only gentle agitation is necessary to ensure complete blending of the aqueous dispersions with the latex.

Another advantageous precaution in the preparation of the compounding ingredients is to pass the dispersions through a "colloid mill," e.g. of the Premier mill type, to ensure thorough wetting of the particles and disintegration of all loose aggregates.

By using relatively high proportions of protective colloids it is possible, indeed, to render compounded latex capable of passage through a so-called colloid mill without coagulation in order to assist the distribution of the powders. The method of procedure described in this paper, however, is preferable in that it obviates excessive use of protective colloids and leaves the compounded latex in a condition rendering it capable of application to a wider range of manufacturing processes. Experience has shown that it is important to be able to adjust the proportion of protective colloids according to the particular process for which the compounded latex is intended. It is easily possible to introduce more protective colloid if and when desired, but almost impossible to remove an excess; highly protected latex consequently is already restricted in its possible applications.

In view of the individualistic character of the rubber globule, the incorporation of rubber-soluble compounding ingredients in the latex, whether as an aqueous solution of the ammonium compound (e.g. oleic or stearic acid), or as an aqueous dispersion, e.g. of a liquid such as mineral oil or of a solid such as sulphur and most organic accelerators, gains added interest and importance.

In the case of sulphur, the fact that this substance eventually finds its way by a process of dissolution into the dried rubber mass renders possible the vulcanization of the article. In the case of the fatty acid and the mineral oil, these eventually dissolve into the unworked rubber globules, and the proportions which can be used with satisfactory mechanical results, and indeed with advantage, are much higher than in the compounding of ordinary milled rubber.

Disregard of the fact that with latex entry to the rubber globule occurs by way of the serum, has led to unjustified claims for the cold vulcanization of the rubber in latex by introduction of sulphur dioxide and hydrogen sulphide. The gases pass into the aqueous medium and react there, so that the resulting sulphur is "nascent" in the wrong phase of the latex; the rubber globules do not undergo appreciable vulcanization by such treatment.

Concentrating Compouded Latex

In almost every direction the fluidity of latex is an advantage. In connection with the storage of compounded latex, fluidity may be disadvantageous in that it permits the sedimentation of suspended particles of higher specific gravity and the creaming of lighter particles, e.g. of oil. This difficulty may be obviated by maintaining the mixtures in gentle agitation, but a more convenient course is to increase the viscosity of the latex *after* compounding. This can be effected by the mere addition of suitable thickening agents such as starch or even milk (skimmed or otherwise). Mere thickening processes, however, have the undesirable feature that the drying of the wet article (formed, e.g. by dipping) involves the removal of a large percentage of water and a consequent great shrinkage and risk of distortion.

Fortunately, a much more advantageous method for thickening the compounded latex is available, namely, by concentration (Brit. Pat. 290,313, 1926; 307,315, 1927). The compounded latex in a steam-jacketed container is maintained throughout the evaporation process in swirling movement without mechanical friction, thereby effecting dispersive agitation until a stage of viscosity is reached at which sedimentation is no longer to be feared; the type of movement also continuously exposes fresh surfaces for evaporation and prevents undue exposure of any one portion to heat or air. After the desired degree of concentration has been attained, the motion is still continued whilst cold water is circulated in the outer jacket instead of steam. The cooled mixture containing up to 70-80 per cent of total solids in uniform dispersion, is then poured into suitable storage-receptacles and is used as required. The products are conveniently described as concentrated-compounded latex (or C.C.L.) mixings. Concentrated compounded latex mixings so produced by the Dunlop Rubber Co., have found extensive use in a wide variety of processes and are particularly well suited to dipping and spreading processes. In consistency they are smooth fluid creams of a degree of homogeneity unattainable by direct compounding of concentrated latex, and by stopping the concentrating-compounding operation at the appropriate concentration any desired degree of viscosity may be obtained.

In connection with the compounding of latex, it may finally be mentioned that not only solid and liquid compounding ingredients may be used, but also gaseous ones. On account of the ease of formation of dispersions of inert gases such as air in liquid of low surface tension, however, it is necessary only to "whip" air into the latex (preferably previously compounded) to which a small amount of frothing agent has been added. A small proportion of a gelling agent, such as sodium silico-fluoride, having a delayed action is then introduced, and the frothed mixture is run into suitable moulds and, after gelatin has occurred, vulcanization is effected in the ordinary way.

Articles of the cellular air-cushion type, much larger than those producible individually by the ordinary dry-mixing processes and of any desired shape, can thus be obtained directly. After drying, which occurs with surprising rapidity, they are ready for use (Brit. Pat. 332,525, 332,526, 333,952, 1929).

The "air-compounded" latex can be used just as well as ordinary forms of compounded latex for producing goods by dipping or spreading processes.

The paper concluded with a brief reference to other methods of manufacture of artcles from latex including such processes as plain dipping; forming articles by dipping with porous formers with reduced internal pressure; so-called ionic deposition in which the dipping operation is facilitated and expedited by using a former coated with an adherent film of coagulant substance; anodic deposition in which the article is formed by the electriphoretic method in which the anode itself, or a porous diaphragm surrounding the anode, constitutes the mould or article to be coated; methods for giving decorative surface patterns, e.g. multi-colored effects by spraying or dipping and wrinkled or "crocodile pattern" effects by special dipping operations; moulding, e.g. for production of thread, sponge, etc.; proofing and the production of spread sheet.

Latex and Crude Rubber

By E. A. Hauser

THIS subject was chosen with the idea that the development of latex application has reached a stage where a frank criticism of its merits as compared with the processing of ordinary crude rubber, is not only justified but even necessary. The necessity has arisen, because an objective critic, even if a great believer in the direct application of latex, can sum up the results so far obtained, and ascertain where the hopes of the pioneers in the direct application of latex have been more or less successful or

where they have failed. Furthermore, our constantly increasing knowledge of latex chemistry and physics allows one to draw theoretical conclusions as to those applications where latex, most presumably, will never be able to compete advantageously with crude rubber, and such lines where latex with the greatest certainty will always be a superior raw material.

The principal hope of those propagating the direct use of latex years ago has so far practically been a complete failure, even considering quite recent achievements in the application of latex for dipped goods, sponge rubber and a few other surgical or technical goods. Those developments have not yet gone beyond a semi-commercial stage, in fact they should still be figured as somewhat enlarged research experiments. But even taking these into final account, the percentage of latex used in comparison with crude rubber in ordinary rubber manufacturing processes has remained absolutely negligible, and therefore the hope of many, that the application of latex would be a very fast development, has undoubtedly failed as far as the rubber industry goes. The author does not believe that the rubber industry could not have found applications for latex right away, and as far as continental Europe goes it could be proved by facts. The author does not know of any central European textile mill which formerly was directly interested in the manufacture of double textures, mackintoshes and the like. They had all their fabrics doubled or waterproofed in one or the other factory most convenient for them. This picture has completely changed, and today a great number of cotton mills are, by the use of concentrated latex, turning out double textures or the like to the disadvantage of the rubber industry. In fact, some of these factories have managed to create entirely new types of products mainly using very heavily compounded concentrated latex for the purpose of obtaining a material for inlay soles or covers. The export of such materials to England is considerable, but no English manufacturer has yet shown sufficient interest to produce this material over here. Considering this fact, one of the outstanding advantages of latex application becomes clear. The successful application of latex can be carried out with a minimum of knowledge of rubber manufacturing methods, whereas the application of crude rubber demands, even in the simplest processes, information obtainable mostly by experience. The compounding of latex is so simple that a child could learn it, and the application is furthermore facilitated by the fact that the leading organizations interested in the use of concentrated latex in continental Europe, neither make a secret of their knowledge nor do they block the general application of latex by patents as is customary in other countries. On the contrary they assist the consumers by giving them all the information available in connection with compounding and vulcanization. This is the main reason why the variety of latex applications on the Continent has gone far beyond the application throughout the rest of the world.

Application of Latex to Fabrics

In the application of latex to fabrics, the actual successes have admittedly been obtained on a large scale with double textures and heavily compounded surface coatings, and in the manufacture of single-proofed fabrics or double-proofed fabrics. Latex has so far, however, not yet met with the success anticipated some years ago. It is in such goods of the spread type, where the consumer has a definite idea as to the appearance and feel of the finished product, that the development has not reached expectations. This is due to the fact that the surface cannot be regarded as absolutely smooth, besides having a harsh or papery feel, and contrasts with the suppleness and softness of the finished cold-cured rubber sheetings. This is one of the problems where latex has so far not been able to compete with old rubber manufacturing methods, but as times go on this problem will be solved. Thus methods have been found which overcome the difficulties of obtaining smoothness of surface, and it will not be long before a satisfactory finish will be obtained by the use of latex. Another not less important point in connection with the coating of fabrics is the supply of water-proofed colors. The author has not yet been able to find any colored latex spread sheet or coated fabrics on the market, which did not lose their color in washing or scrubbing. The explanation is similar to that which accounts for the different behavior of carbon black in latex compounds, which are found to exhibit comparatively poor abrasive properties. The reason is that the dyestuff particles and carbon black in an ordinary mix, must be regarded as the "disperse phase" of the system surrounded by the rubber which acts as "dispersing medium," and as a very powerful protective colloid at the same time. The latex mix is a heterogenous system or conglomerate of individual rubber particles mixed with foreign matter. Quite recent work, however, suggests that the question of obtaining absolutely fast dyes has been solved, and that such dyes will be shortly on the market. With regard to the impregnation of fabrics which has been of considerable interest during the last months, it must be stated that the actual impregnation of a single cord or fabric by the use of plain or concentrated latex is a theoretical and practical impossibility. The rubber is simply deposited as an envelope on the outer surface of each single thread, and the rubber does not penetrate into the fabric, so that, depending on the type of fabric used, the coating can be pealed off with more or less ease. Owing to the fact, that latex is practically a non-flowing rubber, the degree of impregnation remains unaltered during vulcanization. Here again increasing knowledge of rubber latex has shown methods of overcoming this obstacle, and of producing latex compounds having the specific property of increasing penetrability. The other equally good possibility is to pretreat the fabric with certain ingredients especially adapted to increase penetrability. An entirely new patented development in this connection is the production of threads or fabrics in which the latex is incorporated in the earliest stages of spinning.

Electro-Deposition Process

The electro-deposition process, which is based on sound electrotechnical and electro-chemical ideas, coupled with a profound knowledge of latex, must result in a cheap and very efficient production of various rubber goods. Certain recently disclosed processes, about which Professor Bruni will speak shortly at a meeting of the London section of this Institution, might have a very pronounced influence in regard to the actual value of electro-deposition. These processes have undoubtedly opened up the application of latex in the original rubber industry far more than any latex process so far known. But here again they are based on the increasing chemical knowledge of latex.

All the processes discussed so far will in time allow one to produce a great number of goods by the direct application of latex, thereby discarding all present heavy machinery. But the disclosures so far publicly made will not permit the manufacture of moulded goods of considerable thickness. Here again quite recent results seem to justify the statement, that in the not too distant future the difficulty may be overcome. When this difficulty has definitely been overcome, the applicability of latex in regard to the rubber industry will increase considerably.

From the preceding statements, it will be concluded that progress is sure but slower than was anticipated, nevertheless it will not be long before latex will be used in increasing application where today dissolved rubber is employed. In the fields where rubber is today applied in its solid form, the applicability of latex will depend mainly on the economic question, whether latex methods are cheaper and more efficient than the methods used today with crude rubber. Naturally, one will have to take into consideration the far better quality of latex goods, and it is generally accepted that latex goods show over goods manufactured by any of the old methods an amazing superiority in regard to mechanical and ageing properties.

Many a product, which is normally made out of crude rubber, could be made out of latex today, but those products will for some time not be made out of latex because theoretical difficulties are so big and so hard to overcome that it will not pay in the long run to change the present methods which are satisfactory. An example is afforded by the manufacture of tire treads. There is no object in pushing the application of latex in the rubber industry where it is at present unsuitable, as there are so many fields directly open for its application, and which may be regarded as absolute mono-

polies. The development on these lines would increase the consumption of latex far beyond the present possibility of deliveries. As an example of the utilization of latex, reference may be made to the "Hairlok" process. This is a monopoly line because such a product could not be produced with any other type of rubber. (Several cushions and upholstery were exhibited.) A further line where latex undoubtedly is unique in its application, is in combination with leather with the purpose of producing soles or the like. (Samples were shown.) The manufacture of a new type of rubber cotton thread is another application which can be employed in the production of a woven, but not plied, rubber textile belting, exhibiting an amazing flexibility and wear resistance. A further development of latex application is the manufacture of moulded asbestos-latex brake bands and clutch facings. This type of brake bands has the advantage of instantaneous brake and release. For the sake of completeness, mention may be made of the production of rubber filters in soft or hard form by the use of latex. This line, which has been developed in Germany, is constantly increasing in importance in the chemical industry owing to its inertness towards most of the chemicals to be treated. Reference has already been made to the recent developments in the manufacture of sponge or foam rubber for toilet, upholstery and insulating purposes. If the complicated machinery in ordinary sponge manufacture is considered, as compared with the ridiculously simple methods when using latex, it must be agreed that here again latex will become a very serious competitor with crude rubber. One more field in which latex is becoming of increasing importance is the field of acid- or alkali-proof coatings of vessels and sieves for the chemical industry. Soft and hard rubber coatings may be successfully applied which, besides amazing chemical resistance, can be attached to the surface by appropriate means to an extent previously unknown in the older methods.

Final reference must be made to the problem of rubber roadways. In times where the world is shaken throughout by a terrific financial crisis, no advantage can be justified in expensive rubber roadway constructions when the same results can be achieved by the use of latex for a fraction of costs. The author expressed his firm opinion that it could be done. It is certain that such ideas can equally well refer to other applications such as floor covering, roof covering and the production of new building materials.

It is essential that everyone working in the rubber industry should think, at every step of their process, whether latex might be advantageously applied. An enormous potential field exists for its exploitation.

Scrap Rubber

SCRAP prices have continued at a very low level. There have been recent reductions in tubes quotations for dealer warehouses, in the Metropolitan New York area, for example, dealers are now buying mixed tubes at 90c to $1 per 100 lbs., while in Akron there are few purchases by dealers at more than $1. A little exporting, much less than was done a year ago, has taken place in No. 1 inner tubes. Dealers, however, are buying this grade as low as 1.75c per lb. at warehouse and are also paying a maximum of about 2c for No. 1's and transparents. In some cases straight transparents have been bought at 2.25c against export orders.

Straight mixed tires are moving in small volume to Akron, eastern Pennsylvania and Connecticut points, for Akron dealers paying around $7.50, for other points $5-$5.25 while for beadless tires $10.50 is the ruling quotation for Akron and $8 for other points.

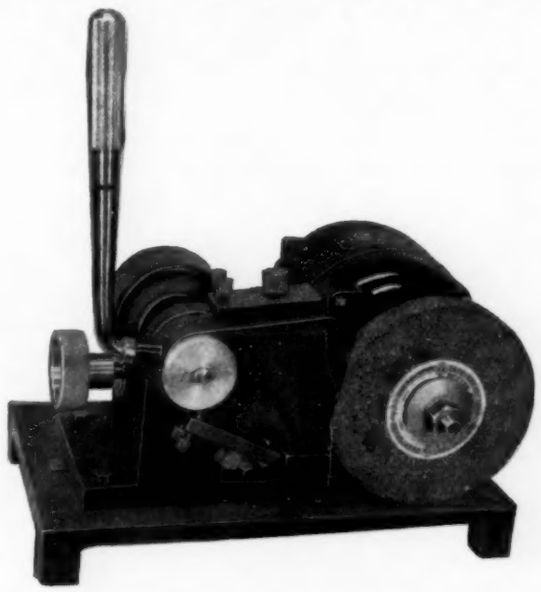
Dealers paid $13 per ton for boots and shoes for eastern points, chiefly New Jersey and Connecticut reclaiming plants, which is slightly higher than a month ago because of scarcity of spot scrap.

Machine for Grinding the Surface of Rubber Samples

IN THE preparation of specimens for tension tests it is necessary that they be of uniform thickness and that the surfaces be smooth. Otherwise it is not possible to accurately measure the thickness of the specimens; hence, any values as to strength, based on thickness measurements, are likely to be in error.

In the case of hose and other material in which the product is made up with layers of fabric it is necessary to separate the layers. The separation of the fabric and rubber always leaves the impression of the fabric on the surface of the rubber. This must be removed before any reliable values of thickness and strength can be obtained.

The machine shown in the cut was designed to accomplish this purpose and has proved very convenient and satisfactory. The rubber to be buffed is clamped to the circular sector, which is oscillated in front of an abrasive wheel, especially selected as to grain for this purpose, and running



at approximately 3400 rpm. By means of the hand wheel the specimen can be advanced towards the grinding wheel in thousandths of an inch. The quick acting clamps hold the material firmly against the sector but it may be quickly released when the buffing operation is over. The grinding wheel is mounted directly on the motor shaft and all gearing belts and pulleys are therefore unnecessary. To compensate for wear of the grinding wheel the whole sector may be moved forward by merely loosening the four base bolts. —(American Instruments Co., Washington, D. C.)

Scorched Compounds

"Scorched" compounds, i. e., those curing prematurely on the mill, calender, tube machine, or in the storage bins have always caused rubber manufacturers more or less trouble. During the past few years, the use of ultra accelerators has somewhat increased this trouble. Compounds that have been "scorched" or partly "set up" in this way, but are not completely cured, may be "reclaimed" or plasticized for further processing by slowly adding one pint to one quart of water to 100 pounds of the stock as it is being sheeted on the mill. In some cases, it may be necessary to add more accelerator to obtain correct cures.—R. R. Olin Laboratories, Akron, Ohio.

Recent Developments in the World's Trade in RUBBER FOOTWEAR

Competition From Countries Producing Low Priced Footwear Is Steadily Increasing—Japan Now Leads the World in Export Trade—Russia Becoming An Important Factor—U. S. Exports Drop 43 Per Cent

IN reviewing the trend of world exports of rubber footwear during the past 10 years, it is desirable to divide the whole period into two stages of development—one covering the normal years through 1927, and the other the prosperity era and the subsequent depression 1928-1931. The Department of Commerce has recently published a comprehensive survey of the world's rubber footwear trade in *Commerce Reports*.

During the first period exports of the various countries competing for the world trade followed rather definite lines, the United States leading in exports and gradually building up the volume of its trade; France and Canada steadily increasing their share of the world trade, to furnish the major competition for the United States; Germany and the United Kingdom following definite trend, although the former suffered a net loss over the period of years; and Sweden making real progress in the division of smaller competing countries. At the same time, Japan had commenced to expand the volume of its exports, after recovery from the earthquake of 1923, Malaya had developed a rubber footwear industry into export proportions, and Belgium had commenced the export of cheap canvas rubber-soled shoes.

Low Price Footwear Gains Control

In the latter period the producers in Japan, Malaya, Belgium—and, later Czechoslovakia—reached their full stride, and low priced footwear commenced to gain control of the world trade. Japanese exports doubled in 1928, to just exceed the volume of those from the United States; and after again doubling, the total quantity in 1929 continued its development and placed Japan in a position of undisputed leadership among world exporters. Malayan exports more than doubled in 1929, although they dropped off considerably in 1930 and 1931; the Belgian trade reached its peak in 1930, but tapered off during 1931; and Czechoslovakia entered the field in 1929, to attain prominence and fourth place among world exporters in 1931. Of the countries formerly considered as competitive, Germany alone was able to make a net gain over the four-year period, by a gradual increase just offsetting the steady decline which had begun in 1924. The United States, Canada, United Kingdom, Sweden, and to a certain extent France, carried on through the boom years of 1928-29, but the retrenchment period of the past two years, coupled with the growing low price competition, knocked the bottom out of the former leaders' exports and left their totals seeking new low levels.

The rapid development of the United States export trade in this commodity—from 4,000,000 pairs in 1922 to 13,000,000 pairs in 1929—resulted from the almost universal appreciation of the quality of the American product. The coverage of world markets, both in the range of classes and types, and the number of countries served was greater in the case of the United States than that of any other exporting country. This constant expansion, however, lasted only through the period of growing world prosperity and high prices. When the crash finally came the United States drop was greater than that of other countries; our labor costs were higher, and production costs could not be forced down sufficiently on the reduced volume of output to compete with low foreign labor costs. United States exports dropped 40 per cent in volume during 1930, and 43 per cent during 1931, to 3,291,000 pairs—a record low for the period under review.

Canada during this same time rapidly grew in importance through the specialized export of canvas rubber-soled lines—largely to other British markets, where they benefited from a tariff preferential, and to certain South American countries. The volume of Canadian rubber footwear exports rose from only 1,000,000 pairs in 1922 to a peak of 1 11,600,000 pairs in 1929, and in that year were exceeded only by those from Japan and the United States Subsequently, however, declines of 32 per cent in 1930 and 38 per cent in 1931 dropped the Canadian volume to 4,918,000 pairs—a larger total, nevertheless, than that registered by the United States in the same year.

Japanese Lead in Exports

Japanese exports of rubber footwear were the outstanding development of the entire period. Starting from a low point of 1,300,000 pairs in 1924, exports expanded with increasing rapidity until they had surpassed all other countries in volume in 1928, with 10,000,000 pairs, only to continue the increase to a peak of approximately 34,000,000 pairs in 1931—an increase over the 3-year period of 237 per cent. This astonishing total has been reached almost entirely through the Japanese development of far eastern markets. They have catered to the native needs by supplying strictly oriental-type footwear in rubber and by putting "western" type canvas rubber-soled and other rubber footwear within reach of the oriental pocketbook. As a result, not only have they completely dominated the far eastern markets formerly held by the United States and United Kingdom, but have developed an enormous business in fields previously untouched by higher priced rubber footwear.

French exports were growing in importance during the first period of our study, but following 1928, when about 6,000,000 pairs were exported, a definite downward trend commenced, which left French exporters with but 2,430,000 pairs shipped in world trade for the year 1931. Germany finished 1923 with more than double the French total during that year, but reversing the French order, declined

steadily until 1928, when upturn began and successive increases raised the German total to 4,383,000 pairs in 1931—the third highest figure for that year. The United Kingdom, which may be placed in the same bracket with France and Germany, held about an even course in rubber footwear exports throughout the 10 years, expanding only in response to general business sentiment, reaching a high point in 1929 with over 4,000,000 pairs, and falling off to but 2,000,000 pairs in 1931.

Sweden has been a factor of growing importance throughout the period under discussion. Building up a trade in good quality waterproof rubber footwear, Swedish exporters reached their peak in 1929, when 3,500,000 pairs were exported. During 1930 and the first half of 1931 world trade conditions, combined with labor troubles within the industry, reduced Swedish exports by 60 per cent, but a substantial gain was made in the last half year, with the result that 2,163,000 pairs were exported during 1931—14 per cent more than in the preceding year.

Austrian exports have fared about evenly over a period of years, falling between 1,700,000 and 600,000 pairs annually—the high point in 1924 and low mark during 1926. In 1929 Austrian exporters shipped 1,488,000 pairs of rubber footwear, while following successive annual declines the 1931 figure was 668,000 pairs.

Exports from British Malaya, which have been built up through a trade similar to that of the Japanese and largely confined to canvas rubber-soled, increased steadily from 1924 through 1929, when 6,629,000 pairs were shipped. During the past two years the one large Malayan exporter was not able to continue the pace set during former years and the Malayan total dropped to 3,500,000 pairs in 1930 and 3,100,000 pairs in 1931. Belgian rubber footwear exports—also a product of low price and quality—increased rapidly from 1925 to 1930, when 3,000,000 pairs were exported. In 1931, however, a 20 per cent loss was registered, leaving a total of 2,400,000 pairs.

Czechoslovakia is the remaining factor, and during the past two years one of growing importance in the world trade. Similar to Malaya, in that production and export is dominated by one company, exports have risen from 200,000 pairs in 1929 to nearly 3,500,000 pairs in 1931. This trade, too, is built up on the export of low-priced rubber footwear, but until recently has been shipped mainly into near-by European markets.

Future Competition From Russia

Potential competition is forthcoming from another source—Soviet Russia. Although no statistics are available showing the extent of the Soviet trade, there is evidence that large shipments are made at times to the eastern European ountries, and at competitive prices. Reports appearing in Soviet periodicals would indicate that production of rubber footwear, as well as other rubber goods, is being materially increased and amounts to 35,000,000 or 40,000,000 pairs annually at the present time.

The British market reflects very well the development that has been in progress in world rubber footwear exports. Price cutting has been the order of the day, and with the very great advances made by Czechoslovak and Japanese exporters, the old-time leaders have virtually lost control of the import trade. Canadian exporters, who had previously supplied far the largest part of the British foreign footwear needs, were surpassed in volume of business done by Czechoslovak exporters, who have been most active in the British market. Canadian exports to the United Kingdom fell from approximately 3,000,000 pairs in 1930 to 2,300,000 pairs during 1931, while the Czechoslovak total climbed from less than 500,000 to 2,500,000 pairs. Germany dropped off only about 100,000 pairs, to 1,500,000 pairs, and France lost some ground, to finish the year with exports of about 500,000 pairs. The United States suffered the greatest loss in the British market, decreasing from a total of over 1,000,000 pairs to 600,000 pairs. Although there are no statistics available covering Japanese exports to Great Britain, reports of serious Japanese competition in that market have been prevalent.

The British Indian market has been in large measure responsible for the success of Japanese foreign trade in rubber footwear. Consumption of footwear has increased remarkably since Japanese exporters entered the market—only 1,778,000 pairs of rubber, leather, and canvas footwear having been imported in 1926, while in 1931 the total was nearly 12,000,000 pairs. Of this amount, a very small percentage of which is not rubber footwear of one kind or another, Japan supplied over 11,000,000 pairs.

World Gasoline Prices

THE following tabulation shows the retail prices for gasoline in various countries of the world, during the fourth quarter of 1931, as compiled by the Petroleum Section, Minerals Division, Department of Commerce.

Gasoline sold highest in Lourenco Marques, Portuguese East Africa, and at the lowest in The Hague.

	U. S. Cents per Gal.
Australia, Sydney	24.5—28.8
Brazil, Sao Paulo	28.1
British Malaya, Singapore	38.6
China, Shanghai	30.2
Germany, Leipzig	33.6
Italy, Rome	38.0
Netherlands, The Hague	12.0
Philippine Islands, Manila	28.4
Portuguese East Africa, Lourenco Marques	76.1
United Kingdom, London	23.1

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE, published semi-monthly at New Brunswick, N. J., for April 1, 1932.

State of New York
County of New York } **ss.**

Before me, a notary public in and for the State and county aforesaid, personally appeared Peter P. Pinto, who, having been duly sworn according to law, deposes and says that he is the Business Manager of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers, are:

Publisher, Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; Editor, J. P. Bushnell, 250 W. 57th St., New York City; Managing Editor, none; Business Manager, Peter P. Pinto, 250 W. 57th St., New York City.

2. That the owner is (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given):

Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; P. L. Palmerton, 250 W. 57th St., New York City; Earl D. Osborn, 40 E. 36th St., New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contains statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stocks, bonds, or other securities than as so stated by him.

PETER P. PINTO, Business Manager.

Sworn to and subscribed before me this 30th day of March, 1932.

[SEAL] IRVING KAPLAN, Notary Public.

(My commission expires March 30th, 1932.)

EDITORIAL COMMENT

A Rubber "Czar"

THE recent luncheon in New York at the Waldorf-Astoria, tendered by George T. Bishop, to leading executives in the rubber industry and certain financiers closely associated with the industry, and the resulting speculation as to the possible creation of a dictatorship within the industry to combat the problems of competition and vicious trade practices, brings to mind a similar effort made in 1928, when General Lincoln C. Andrews inaugurated the ill-fated Rubber Institute to put an end to "profitless prosperity" through "cooperation in competition." Since those days the "profitless" part of the picture still remains, while the "prosperity" has completely disappeared.

Just whether a scheme of dictatorship, built along the lines of the czardom of Judge Kenesaw Mountain Landis in the baseball world, will prove the panacea for the rubber industry is problematical. The situation, however, could hardly be worse, and new blood from the outside may operate as a healthy transfusion. So far there has been no confirmation that any dictatorship plan will go through, but smoke is in the air and indications are that there is a fire smoldering somewhere within the industry or more probably within banking circles directly concerned with the industry, that have not liked the bank loans they are called upon to hold or have wearied of making long explanations to clients who have their trust funds in rubber companies.

The industry has been unable to utilize the services of its own trade association to advantage in its trials and it has remained impotent in handling internal difficulties. A new deal, in the form of a dictatorship, may be the way out.

"Doughnuts" and Doldrums

IT has been announced that the changeover in production plans of the major companies from the balloon tire to the new type of "doughnut" tire will mean an expenditure of five million dollars. That the change in type of tire to the "doughnut" is inevitable, is now conceded by most of the tire manufacturers, as evidenced by the rush on their part to place models of this type on the market.

The change should prove a boon to the tire industry, as well as it will be a blessing to the tire equipment and machinery manufacturers. New models stimulate renewal sales. The tire business was in the doldrums some years ago when the balloon tire first made its appearance and the whole industry benefited by the sudden adoption of that type. It is fair to assume that history will repeat itself and the "doughnut" tire may prove to be a lifesaver for the discouraged and well-nigh exhausted tire trade.

The Plantation Problem

THE definite decision against restriction of crude rubber from British and Dutch areas has brought out some interesting comments from rubber interests abroad. With British tenaciousness, and with their backs to the wall, the British planters are not giving up. Nor will they admit defeat at the hands of the native planter. An interesting point of view in this latter connection comes from Zorn & Leigh-Hunt, well-known rubber brokers of Mincing Lane. They say:

"We would like to discount as strongly as possible any loose talk to the effect that the plantation industry is faced with complete ruin and that the struggle which lies ahead necessarily involves the ultimate supremacy of the natives. There are two main sources of supply of native rubber—Malaya, where the production under this heading amounts to approximately 200,000 tons per annum, and the Dutch East Indies, which supplies about 100,000 tons yearly. The Malayan native has been tapping all out for some time in order to offset the low price of the commodity, and there is no tangible prospect of any addition to this supply under existing conditions. In the Dutch East Indies the current rate of native output has remained more or less stationary for the last two or three years. It is said that in this district the natives have large immature areas and that there is ample scope for a big increase in production at any time. Granted that the untapped areas exist, any substantial increase in supplies would depend principally upon the importation of fresh labor, a position which cannot arise until the price of the raw material is established at a level much higher than that now ruling."

The RUBBER AGE

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General Manager.....PETER P. PINTO
Managing Editor.....J. P. BUSHNELL
Circulation Manager.....M. A. KRAMER

Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

RUBBER INDUSTRY HARD HIT IN EXCHANGE DROP

Akron rubber companies, in particular the Goodyear Tire and Rubber Company, the B. F. Goodrich Company, and the Firestone Tire and Rubber Company contributed heavily to the staggering total of foreign exchange losses reflected in 1931 statements of a selected list of American industries, says the *Wall Street Journal.*

All of the nation's leading industrial concerns doing an export business suffered because of the slump in foreign exchange, but it was only recently that the enormous proportions of the total loss became apparent.

A group of 30 American concerns reported that in 1931 they either incurred an actual loss in foreign exchange transactions or were forced to set up reserves for losses aggregating $27,353,861.

England's unexpected suspension of the gold standard late in September last year is generally credited with precipitating the wave of depreciation in exchange quotations.

Goodyear's loss in exchange fluctuations as shown by its statement was $3,414,039 or $2.37 a share.

The B. F. Goodrich Company escaped with a loss of $1,578,971, equal to $1.35 a share; the Firestone Tire and Rubber Company set aside a reserve of $1,908,727, partly from earnings from surplus to care for foreign exchange shrinkage.

The United States Rubber Company was hit hard, its statement revealing a loss due to exchange shrinkage of $1,214,498 or 83 cents a share.

There has been some recovery in exchange quotations since December 31, 1931, one of the principal factors being the gain in the English pound sterling from $3.39¼ to $3.83⅛.

Dayton Meeting Postponed

The special stockholders' meeting of Dayton Rubber Manufacturing Company for consideration of recapitalization of the company which was scheduled for April 11 has been adjourned until April 25.

The company has 9,300 stockholders scattered throughout the United States, and it has been difficult to get the required two-thirds vote together to put the plan across. The fact that not enough have heretofore responded is believed to be more a matter of indifference than opposition, John A. McMillan, president, states.

Reorganization will change the four classes of stock to two, this being done that the company may function to better advantage and be in shape to properly handle the great amount of business expected when conditions take a decided upturn.

U. S. Rubber Meeting

At the annual meeting of stockholders, held April 19, Walter B. Mahony was elected a director succeeding Matthew C. Brush. Other directors were reelected.

Francis B. Davis, president, stated: "Our organization is now well in hand and we are reducing our budget in line with general business conditions. If we had a volume of business equal to last year, we would have fairly satisfactory results."

Mr. Mahony is president and editor of the North American Review and formerly was director and counsel of United States Rubber Plantations, Inc.

Goodrich's New Developments

"Akron had its start toward becoming the rubber center of the world in 1869, when Dr. B. F. Goodrich organized what is now the B. F. Goodrich Company," Wayne M. Stewart of the Goodrich company told members of five Cleveland Exchange clubs at a luncheon meeting at the headquarters of the West Cleveland Exchange club April 7.

"Since then, the rubber industry has continually progressed and developed a large number of new products to meet requirements of a progressive world," Stewart said.

"Among the more recent of these new products by the Goodrich company are the Zipper boot, Goodrich armorite, a rubber coated metal used in industrial chutes for conveying hard materials, the cutless bearing, used wherever water is a lubricant, colored sidewall tires and wing overshoes designed to remove ice from airplanes."

Canadian Rubber Association

Officers of the Rubber Association of Canada for the year 1932-33 were elected at the recent annual meeting as follows: President, F. A. Eric Warren, president and general manager of the Gutta Percha and Rubber, Ltd.; vice-president, Earl S. Sargeant, vice-president of the Canadian Goodrich Company, Ltd., Kitchner, Ont.; treasurer, H. C. Jeffries, president of the Viceroy Rubber Company; assistant treasurer, C. A. Jones, vice-president and general manager of the Seiberling Rubber Company of Canada, Ltd.; manager, A. B. Hannay.

RIM PRODUCTION IN MARCH OFF 10 PER CENT

Automobile rim production in March, reflecting the slowing up in automobile production which preceded the introduction of the new Ford car, dropped 10.7 per cent below the February rate, according to statistics issued by the Tire and Rim Association, the official inspection bureau with offices in Cleveland, O.

The bureau last month inspected and approved a total of 648,013 rims, compared with 726,172 in February and 810,759 in January. In March one year ago the output amounted to 1,425,336. The total for the corresponding month of March, 1930, was 2,061,299, while in March of 1929 output was near the peak for all time at 2,613,403 units.

Normally rim output and automobile production move gradually upward together during the first three months of the year. This was true even in the depression years of 1931 and 1930. So far this year, however, the trend has been in the opposite direction, revealing the unusual hesitation which followed the brief upturn accompanying the introduction of the annual show models.

The cumulative production of rims for the first quarter of 1932 totals 2,184,934 units, according to the Tire and Rim Association's figures. This compares with 3,950,365 for the first three months of last year. This year's output to date therefore falls nearly 45 per cent below that of the comparative period of one year ago.

Production of drop center rims last month was 509,784, compared with 828,069 in March a year ago, but the proportion of drop center rims to total output last month increased to 78.7 per cent, compared with only 58.1 per cent in March, 1931.

Exchange Expels Member

The board of governors of the Rubber Exchange of New York, at a meeting held on Monday, April 18, 1932, acting under the provisions of Section 52, of the by-laws, expelled Sidney J. Pike, Jr., from the Exchange, and censured and suspended Thomas A. Desmond for a period of thirty days, and revoked the corporation privileges of T. A. Desmond and Company, Inc., for violation of Trading Rule 4, sub-division (f) of the Exchange, covering "misleading or ambiguous bids."

Thomas A. Desmond is president and Sidney J. Pike, Jr., is vice-president of T. A. Desmond and Company, Inc.

R. & H. ELECTS DAVIS; MAKES OTHER CHANGES

At the directors' meeting of the Roessler & Hasslacher Chemical Company, Inc., manufacturers of R & H chemicals, held on March 28th in New York City, Dr. H. R. Carveth, president of the company, announced his retirement as president and director of the company and as a director of The E. I. du Pont de Nemours & Company, Inc., of which R & H is a subsidiary. Dr. M. J. Brown, vice-president and a director of R & H also resigned all positions with the company. Charles K. Davis of New York was elected president to succeed Dr. Carveth. He will also be general manager of the company. Dr. E. A. Rykenboer, formerly vice-president of the company will be vice-president and assistant general manager.

Dr. Carveth's retirement ends almost 26 years of service with R. & H., during which time the company grew to be one of the largest manufacturers of chemical specialties in this country. After a brief association with the late Dr. E. G. Acheson, Dr. Carveth joined R. & H. in 1906 as works manager of the Niagara Electrochemical Company, Niagara Falls, N. Y. For the next 11 years he devoted his activities almost exclusively to the development of electrochemical processes and was an important factor in many important improvements in manufacturing methods at the plant. He became vice-president in charge of technical matters in 1917 and president of R. & H. in 1928, continuing in that capacity after the R. & H. merger with the du Pont Company in April, 1930, at which time Dr. Carveth was elected a director of the du Pont Company.

The retirement of Dr. Carveth was not entirely unexpected for he had made known his wishes to be relieved of executive responsibilities in order to devote more time to his increased personal interests.

Carbon Black Prices Cut

For the first time in approximately a year the carlot price of carbon gas black at the works, Texas, was reduced. It had been at a low point of 3c for this period. Leading producers have announced a cut of ¼c, effective immediately, putting Texas gas black in bulk at the works at 2.75c and Louisiana at 2.85c. The reduction was not the result of an oversupply, since the excess stocks has been a known factor for a long time, nor was it a reflection of lessened demand. According to trade interests it merely was a competitive move.

All-Ohio Safety Congress

At the All-Ohio Safety Congress, held at Columbus, April 19-21, Akron rubber company executives took an active part. The following rubber men spoke during the sessions: G. C. Hantleman, Goodyear Industrial University, on "Safety in Foreman Training;" G. L. Matthias, B. F. Goodrich Company, on "Habits and Their Relation to Safety;" B. F. Gerphide, Goodyear safety engineer, on "Safety Kinks;" R. W. Morse of Firestone Tire & Rubber Company; J. Q. Lee of India Tire & Rubber Company and Dr. Paul A. Davis of Goodyear.

Goodrich Workers Honored

Twelve employes of the B. F. Goodrich Co. were awarded 20-year service pins in April.

The list includes Lloyd B. Amstutz of the Chicago branch, who has been awarded the Master Merchandiser distinction for the last two years; Roy D. Mountford, manager of factory billing; Frank Quick, mechanical goods staff; Ferdinand F. Brucker, legal department.

Ethel E. Farst, comptometer division; Lloyd Graffius, traffic division; George Gruber, processing division; James G. Hill, power house; Louis Moeller, tire division; Z. H. Rager, mold division; Sam R. Tonks, tire division and Charles Webster, mold division.

Baldwin Rubber Co.

Baldwin Rubber Co. reports for year ended December 31, 1931, net loss of $1,303 after charges and depreciation. This compares with net profit in 1930, of $150,855 equal after allowing for class A dividends, to 75 cents a share on 100,690 no-par shares of class B stock.

Goodrich and Miller Frolic

More than 150 workers in the engineering and miscellaneous departments of the Goodrich and Miller plants attended the annual spring frolic at Breathnach Country club April 4. H. E. Cook, general superintendent of the engineering department, and John Gauthier, manager of transportation gave brief talks. Joe Sica and his Five Peppers radio orchestra, and Gus Anderson, soloist, furnished musical entertainment.

F. S. Carr Liquidates

F. S. Carr Company, Framingham, Mass., manufacturers of many years standing of rubber fabrics and artificial leather, have announced that they are liquidating their business.

Yale Tire Liquidates

Announcement was recently made that the Yale Tire and Rubber Company, 961 Dixwell Avenue, New Haven, Conn., had gone into the hands of receivers and would liquidate.

Rubber Footwear Duty

The tariff commission has dismissed the application of the Rubber Manufacturers' Association for an increase in the duty on canvas rubber-soled footwear and on waterproof footwear.

Badenhop Moves

The Robert Badenhop Corporation, crude rubber brokers and members of the Rubber Exchange of New York, announce the moving of their offices to the Woolworth Building, 233 Broadway, New York City.

GOODYEAR'S COAL MINE IS CLOSED BY STRIKE

Goodyear Tire and Rubber company's coal mine near Adena, Ohio, employing 700 men has been shut down temporarily following a demonstration by striking miners.

The Goodyear mine, Wheeling Township Coal company, was the last of the large eastern Ohio mines to shut down.

"Men employed by the Wheeling Coal company have indicated that they are perfectly satisfied with wages and the conditions under which they work and the mine will be reopened as soon as conditions warrant," vice-president C. C. Slusser said.

Shutdown of the mine will not interfere with operation of Goodyear tire plants, Slusser said, as more than 30 days supply of coal is on hand in Akron and more is on the way in.

Goodrich Elections

After the regular meeting of the board of directors of the B. F. Goodrich Company, April 12, 1932, W. D. Ticknor, president of the Commercial Solvents Corporation was elected to the board and Sidney J. Weinberg of Goldman, Sachs & Company was appointed a member of the executive committee.

Joseph G. Muirheid

Joseph G. Muirheid, 64 years old, at one time head of the tire department of the Thermoid Rubber Company, Trenton, N. J., was instantly killed on March 24, when he was crushed by a falling elevator in a building at Charlotte, N. C. He was making an inspection of an unoccupied plant with the view to leasing it as a plant to manufacture rubber accessories, when the elevator fell with him. Several years ago he went to Charlotte where he became affiliated with the J. & D. Tire Company. Later he was service manager of the McClaren Tire Company at Charlotte.

T. J. Mell

Tod J. Mell, who was instrumental in developing the first non-skid tire, died April 3, at Akron, O., at the age of 55.

Mr. Mell was born in Akron Oct. 2, 1877, being a son of the late Captain J. R. Mell. He was a graduate from the Central high school and a member of the Fifty Year club.

It was in 1903 when with the Republic Rubber company that he developed the non-skid tire. He was a brother of M. M. Mell, president of the M. M. Mell company, Akron, and Cloyd Mell of Cuyahoga Falls, O.

D. V. Sibley

News of the death of Don V. Sibley, 33, Goodyear salesman in Bombay, India, who trained in Akron last summer, was recently received by company officials.

A graduate of Stanford university, he joined the Goodyear sales staff in Portland, Oregon, in 1927. He was called to Akron last summer and went to India two months later.

Names in the News

W. O. RUTHERFORD, president of the Pennsylvania Rubber Company, has returned to Jeannette, Pa., from a wide swing of the country, during which he addressed many Pennsylvania tire branch organizations. Accompanied by his son, JOHN C. RUTHERFORD, advertising manager, Mr. Rutherford held conferences successively in Chicago, Kansas City, Dallas, Birmingham, Jacksonville, Atlanta, Cincinnati, Philadelphia, New York and Boston.

JAMES A. WHEATLEY, sales manager of the Thermoid Rubber Company, Trenton, N. J., has been on an extended business trip to the Pacific coast.

C. S. CHING, director of industrial and public relations of the United States Rubber Company, will address the American Management Association, at its annual spring convention, at the Hotel Pennsylvania, New York City, N. Y., on May 2, on the subject of "Employees and Potential Employees."

JAMES KELL, chairman of the board of directors of Goodyear's Australian plant and head of the Commonwealth Bank of Australia, together with his friend DR. ALBERT C. SMITH, also of Australia, was recently in Akron and was entertained at luncheon by officials of the Goodyear company.

The following Goodyear officials were hosts at the luncheon: W. D. SHILTS, secretary; F. M. HARPHAM, vice president; HUGH ALLEN, manager, publications department; Z. C. OSELAND, treasurer; P. E. H. LEROY, treasurer; C. H. BROOKS, comptroller; F. R. WAHL, counsel; A. G. CAMERON, manager of export; A. E. PATTERSON, assistant manager of export; C. A. STILLMAN, vice president; HARRY BLYTHE, assistant to P. W. LITCHFIELD; WILLIAM STEPHENS, general superintendent, and H. H. HANNA, assistant treasurer.

JAMES D. TEW, JR., son of the president of the B. F. Goodrich Company, is reported to be rapidly recovering in the St. Thomas Hospital, Akron, O., from injuries suffered in an automobile accident. Young Tew's car was wrecked in a crash involving three machines and he was severely cut and bruised on the head and body.

COL. J. S. ERVIN, former army officer and long a sales executive in the steel business, has been elected president of the Macintosh-Hemphill Company of Pittsburgh, one of the most historically-famous units in the steel business and makers of many of the rolls used in the rubber industry. A number of other changes in executive personnel were announced at the same time. F. HUGHES MOYER was elected vice-president and senior engineering officer. H. E. FIELD, former president of the Wheeling Mold and Foundry Company, was also elected a vice-president. F. C. T. DANIELS, an authority on rolls construction, was elected chief metallurgist and chief research engineer.

DR. A. CAMILLOTTI, engineer with the Gherzi Textile Development Company, Zurich, Switzerland, was a B. F. Goodrich Company visitor April 1-2. He is studying textile processes in large industries throughout the country.

"BUY FROM DISTRIBUTORS" ADVOCATES J. H. CONNORS

A marked tendency on the part of American business to buy through distributors rather than directly from manufacturers is noted by J. H. Connors, vice-president of the B. F. Goodrich Company.

"Formerly it was regarded as good buying practice to place orders directly with the producer," the rubber company executive said recently, "but a transition to distributor dealing has taken place where final cost figures are carefully analyzed.

"It has been found that the maintenance of stock inventory, if complete, with the necessary warehousing, insurance, clerical and stockroom personnel charges, constitute in many cases unnecessary expense if the services of a nearby distributor can be utilized.

J. H. CONNORS

"In the case of this company, for many years a leading manufacturer in mechanical rubber goods, we advocate distributor dealing to our customers on the basis of sound economics.

"Since our distributors are numerous, well established and advantageously located this group is equipped to carry adequate stock inventories and capable of giving every service to the user of our products.

"Cooperation of distributors has been found to be a real value to many of our customers where a telephone call assures prompt delivery of required goods and immediate aid in the case of an emergency.

"In our judgment this method of buying is becoming of increasing importance in modern business," Mr. Connors declared.

I. ELY REED, vice-president and treasurer of the Mercer Rubber Company, Hamilton Square, N. J., has been elected president of the National Bank of Hamilton Square. He formerly held the position of vice-president. Mr. Reed is also president of the Rubber Manufacturers' Association of New Jersey.

HORACE B. TOBIN, of the Woven Steel Hose and Rubber Company, Trenton, N. J., has returned with his family from a trip to Bermuda.

B. J. LEMON, field engineer development division of the United States Rubber Company, announces the promotion of J. A. PAYETTE to the engineer division. Mr. Payette, after his graduation as bachelor of mechanical engineering from the University of Detroit in 1928, joined the technical service department of the United States Rubber Company, in the same year. In 1929, he began doing field work for F. L. KRAUSE, director of tire service department. He joined Mr. Lemon's staff March 1, 1932.

EARL S. SARGEANT, vice-president and general manager of Canadian Goodrich Company, Ltd., Kitchener, Ont., has been elected vice-president of The Rubber Association of Canada. Mr. Sargeant was formerly on the Akron staff of Goodrich.

Keller & Christensen Move

The rubber firm of Keller & Christensen, Inc., formerly located at 17 Battery Place, New York City, N. Y., moved on April 16 to 136 Liberty Street.

Wood Vanderpyl Moves

Wood Vanderpyl Company, Inc., dealers in crude rubber and fabrics and formerly located at 52 Vanderbilt Avenue, have announced that they are now occupying new offices at 11 West 42nd Street, New York City.

Elbogen & Company Move

The firm of Paul Elbogen & Company, crude rubber brokers and members of the Rubber Exchange of New York, announce that they will move their offices on April 30, from 50 East 42nd Street to 450 Fourth Avenue, New York, N. Y.

United Carbon Moves

The New York offices of the United Carbon Company, now at 230 Park Avenue, will be located after May 1 in the Empire State Building, New York City.

U. S. Rubber Reclaiming Moves

The U. S. Rubber Reclaiming Co., Inc., moved its New York office on April 19 from 230 Park Avenue to 500 Fifth Avenue. New telephone number is CHickering 4-6360.

Rubber News Around the World

R. G. A. REVEALS 1½ BILLION DEPRECIATION

The Council of the Rubber Growers' Association of London has just issued an important statement on the present plantation situation. Following the anti-restriction decision of the British and Dutch Governments, the council has decided not to reopen negotiations with the Governments or to consider any voluntary scheme of curtailment. Figures are quoted to show that, if production and absorption in 1932 are on the same scale as in 1931, world stocks at the end of this year will exceed 750,000—over 13 months' consumption.

The council further points out that the issued capital of the Rubber Growers' Association company members is £110,000,000 ($550,000,000) or about £60 ($300) per planted acre, compared with the present market equivalent of £10 to £15 per acre. As the R. G. A. members own only one-fourth of the world's total rubber area, the aggregate depreciation in values is apparently £300,000,000 ($1,500,000,000) on the capital originally invested.

The council makes no recommendation for a specific reduction of crops, but it points out justly that, in the absence of a very large increase in consumption, continued production on the 1931 scale would be disastrous, and low or even unprofitable prices would have to be faced over a very long period. It therefore proposes to discourage the planting of further areas with rubber and to discourage further alienation of land for rubber.

The statement contains suggestions regarding research, as well as the reduction of certain items of expenditure, such as taxation, quit rents, railway rates, wages, and repatriation, which are now a heavy burden on the industry.

North British Resumes

After a short period of inactivity the rubber footwear division of the North British Rubber Company's mills at Edinburgh, resumed work and called back the 2,000 employes which had been temporarily laid off. The cessation of work at the plant was reported in the last issue of THE RUBBER AGE and was declared by officials of the company to have been the result of severe competition in cheap footwear from Japan and a greater degree of tariff protection has been requested of the Government by company officials.

Burma Suspends Rubber Taxes

As a result of the growing depression in the rubber plantation industry, accentuated by the failure of the British and Dutch negotiators to come to an agreement for the regulation of output, the Burma Government has decided to suspend the revenue payable in respect of land granted for the special purpose of rubber cultivation.

Plantations Curtail Output

Numerous rubber plantations in the Dutch East Indies are suspending production entirely, while the tapping of trees on many others is being rapidly reduced, according to recent cable advices to the Rubber Exchange of New York.

The Anglo-Dutch Rubber Plantations, Ltd., and the Ross Taylor interests have decided to close down several of their plantations and both concerns are curtailing tapping on their remaining estates by 50 per cent.

ARGENTINE PATENT FOR PUNCTURE-PROOF TIRES

A demonstration was held recently to test the efficiency of the product called "Nopinch" which has been patented by an Argentine inventor as a practical method of making automobile tires puncture-proof, according to reports of the U. S. Trade Commission at Buenos Aires. The demonstration was attended by a number of high government officials, including the Minister of Public Works, the Mayor of Buenos Aires, and others.

"Nopinch" is made of vegetable fibers which are introduced into the inner tube, the theory being that when the air tends to escape through any perforation made it carries with it the fibers which act as a stopper and effectively seal up the puncture. It is reported that practical demonstrations have proved the efficiency of this product, and as it has no deteriorating effect on the tube, it is meeting with considerable success in the local market.

Russian Air Men in Akron

An aviation commission representing Soviet Russia and headed by G. I. Silin, vice president of the All-Union Civil Aviation Trust of Moscow recently visited the B. F. Goodrich Company to obtain complete information on aircraft de-icers developed by Goodrich engineers.

Ice presents a difficult problem to aeronautic operations in Russia, according to the Russian aeronautic men. The Goodrich device employs compressed air to pulsate streamlined rubber tubes along the leading edges of the wings and tail surfaces, removing ice in flight as rapidly as it forms.

Rubber Stocks Shrink

Despite a reduced rate of export, stocks of crude rubber in the Far East declined from 51,495 tons, dry weight basis, at the end of February, to 47,577 tons at the end of March. Such stocks one year ago totalled 44,317 tons.

In addition, there was a falling off in rubber supplies at "Harbor Board" points in Malaya from 5,189 tons in February to 3,515 tons in March.

MEXICAN TIRE CONCERN PLANS INCREASED OUTPUT

The Popo Company, of Mexico City has installed about $200,000 worth of tire machinery and is in the process of placing about $120,000 worth more, according to a report to the Commerce Department from Commercial Attache Charles H. Cunningham, Mexico City. When this equipment is completely installed it is believed that the plant will be in a position to produce 1,500 tubes and 300 casings daily.

Present production amounts to 150 tubes a day and about 30 casings. According to information received, the plant is practically clean of merchandise at this time and tires are sold and shipped out within twenty-four hours after manufacture.

It is pointed out that the operation of this plant constitutes a very definite menace to the importation of American tires. The plant has a capacity now equal to three times the consumption of inner tubes in the country, and with the new equipment will be in a position to turn out 75,000 tires a year.

Footwear Factory In Yugoslavia

Final confirmation was recently given to the recurrent rumors of the establishment of a rubber footwear factory in Yugoslavia upon the occasion of the visit to Belgrade of Thomas Bata, son of the well-known footwear and rubber manufacturer. Bata declared that his factory would be erected in Vukovar and that his concern was prepared to go ahead with the plant for the factory as soon as possible. This factory is to produce, according to Bata, not only leather shoes, but also rubber footwear and various rubber goods, possibly including tires. His policy here would be to produce shoes at such price levels as correspond as much as possible to the purchasing power of the agricultural population, which amounts to about 80 per cent of the entire population of the country. Bata's employees would be exclusively Yugoslav citizens and he plans to bring a large number of workmen from Yugoslavia to his factory in Zlin for training. An entire workers colony would be constructed in Vukovar, which he apparently plans to turn into a second Zlin. It is understood that the goods produced in Yugoslavia will be sold throughout the Balkans, in India, and in the Far East.

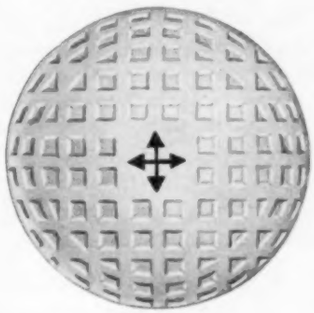
Malayan Tire Market

British Malaya is a million dollar export and reexport market for American pneumatic tires. A price dispute for several months, the exchange situation, increased gasoline taxes, and difficult credit conditions, reduced 1931 American exports to nearly half the 1930 figures, and the American proportion from 46 per cent to 39 per cent. In 1931, there were imported 69,326 American pneumatic tires, valued at U. S. $508,000.

Rubber Goods and Specialties

"Red Arrow" Golf Ball

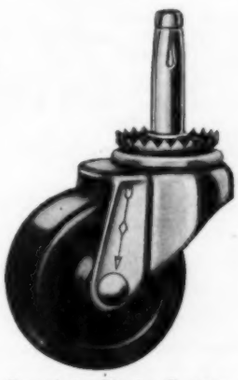
The new "Red Arrow" golf ball, of the Faultless Rubber Company, Ashland, O., is built to the new official size and weight and shows a hardness test of from 95 to 100. The manufacturers claim it to be perfectly balanced and absolutely true in flight. It is durable and highly finished in both mesh and dimple markings. They are attractively packed, 12 balls to a box, and wrapped in



cellophane in 4 smaller packages of 3 balls each and marked with different color markings. The suggested retail price is put at 20 cents each or 3 for 50 cents.

New Bassick Caster

A resilient tread of high grade rubber is molded on the solid core of the new "diamond Arrow" caster for furniture, manufac-



Bassick Chair Caster

tured by the Bassick Company, Bridgeport, Conn. Another feature of the caster is chrome hardened ball bearings which permit easy swiveling.

Dog Head Mucilage Spreader

The Sanford Manufacturing Company, Congress and Peoria Streets, Chicago, Ill., are offering a novel package for a mucilage applier, with a dog's head of molded rubber, adding a decorative touch and suggestive of the bulldog like grip of the adhesive mucilage. A slight pressure on the dog head spreader releases the proper flow of mucilage. The package is supplied in two sizes. It was originally made for the

Dog's Head Mucilage Spreader

school trade but its novelty makes an attractive appeal to the general stationery trade.

Largest Rubber Belt

A FEW weeks ago The Cincinnati Rubber Manufacturing Company, Cincinnati, Ohio, shipped what is believed to be the largest conveyor belt ever built in single length. It weighed 28,370 pounds (14 tons) and on account of its large size was shipped on a gondola car. The belt measured 1615 ft. long and in a single roll would have been too large to go through tunnels and under bridges during transit. It was coiled in two rolls, each roll being 8⅓ feet in diameter.

It is an 8 ply construction, the width is 42 inches, and it is constructed of 42 ounce duck with 3/16" top cover, including breaker strip, and 1/16" bottom cover, making an overall thickness of 13/16 inches.

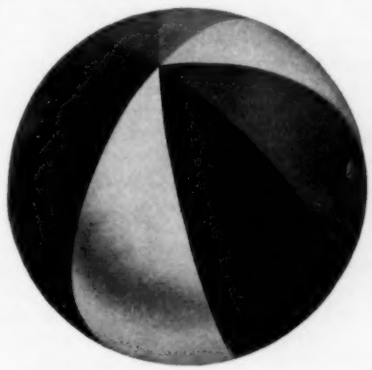
This large belt is being used to carry

coal up an incline from the interior of a mine to the tipple.

The accompanying photo shows the belt coiled in two rolls at the plant of the Cincinnati Rubber Manufacturing Company ready for shipment to a large coal company in West Virginia.

Miller Play Ball

All rubber play balls, in 9" and 11" diameter sizes, and in eight colored sections, is the latest item in the toy and sports goods line of the Miller Rubber Products Company, Akron, O. The colored sections



are red, white, green, orchid, blue, buff, orange and black. Each ball is supplied with a bladder and packed for retail 24 to a box.

Golf Stick Grip

The Argo Specialty Corporation, Empire Building, Detroit, Mich., is introducing a new grip for golf clubs, which they also call a "position marker." It is made of rubber and slips over the end of the club

"Rite-Spot" Golf Club Grip

handle and marks the right spot for the left thumb when the club is held in its correct position. It is supposed to insure the club head always being held at the proper angle and shifting the club in the hands to find the proper position. It is being marketed under the trade name "Rite-Spot." The manufacturers claim that its use will materially assist in straightening out a hook or slice and is instrumental in overcoming the common fault of shifting one's grip.

Odorless Bathing Wear

The Miller Rubber Products Company, subsidiary of B. F. Goodrich Company, have announced a line of rubber bathing wear from which the odor of rubber has been eliminated by the use of de-odorant materials, which were introduced to rubber manufacturers during the past year.

Goodrich Suggestion Awards

Sixteen suggestion awards among the sales and office forces of The B. F. Goodrich Company have just been given. They are: W. R. Cunningham, Goodrich Silvertown, Inc., Harrisburg, Pa.; J. E. Duffy, New York City branch; J. N. Forsythe, St. Louis branch; E. A. Holsten, Philadelphia branch; R. J. Kinaman, Oklahoma City branch; R. S. Kirk, Goodrich Silvertown Inc., Akron, O.; H. C. Krimmel, Chicago branch.

Miss Theresa Murphy, Boston branch; T. B. Echols, Martha Mills, Silvertown, Ga.; E. L. Osselin, San Francisco branch; Herbert Owens, Goodrich Silvertown, Inc., Altoona, Pa.; Perry Pegues, Dallas, Tex., branch; Miss Bessie Robinson, Philadelphia branch; Charles W. Staacke, department 7190, Akron; E. E. Starner, department 0716, Akron, and P. P. Waddle, Dallas branch.

Big Flooring Contract

One of the most important orders for rubber flooring placed in Great Britain has been secured by the Ioco Rubber and Waterproofing Company, Ltd., Glasgow, a subsidiary company of Vickers, Ltd. Upwards of 4,500 square yards of the firm's rubber flooring are specified in the contract, and will be used to cover the entire floor space of the new electricity showrooms which the Glasgow Corporation is erecting.

The Ioco Company, a year or two ago, were awarded the contract for laying the head office of the Midland Bank in London with their rubber flooring.

German Belting Exports, 1931

According to Department of Commerce figures, exports of rubber belting from Germany have steadily increased in recent years, including 1930, but decreased sharply in 1931. German exports of leather belting increased until 1930 when a sharp decline was experienced. German exports of cotton and hair belting have followed a downward trend since 1927. Comparative statistics are as follows:

	Rubber Belting Pounds	*Leather Belting Pounds*	*Cotton and Hair Belting*
1927	973,727	508,463	1,980,735
1928	1,030,590	673,452	1,669,750
1929	1,204,927	720,928	1,761,657
1930	1,229,612	468,570	1,244,158
1931	671,998	341,841	939,123

Stedman Declares Dividend

The board of directors of the Stedman Rubber Flooring Company, South Braintree, Mass., have declared the 54th consecutive quarterly dividend of $1.75 per share on the preferred stock of the company, payable to stockholders of record at the close of business March 25, 1932.

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, APRIL 20, 1932

Crude Rubber

THE crude rubber market, during the past fortnight, has been characterized by a very steady tone and practically no fluctuations from the previous low levels. In view of the statistical position of the commodity it would seem that 3 cent rubber was here to stay for some time. There has been a slight reduction in London stocks and a certain curtailment in shipments from the Far East, but to balance these factors the monthly consumption figures for March showed a decided drop, leaving the already top-heavy surplus stocks at about the same level as before. Buying interest lagged during the last two weeks, especially on the Exchange. Conservatism in automobile construction and reduced tire production schedules in the Akron area will probably continue to hold down the consumption of actual rubber for the summer months. Prices quoted on the New York outside market, as of April 20, follow:

Plantations—			
Ribbed Smoked Sheets—			
Spot-April	.02⅞	@	.03
May-June	.02⅞	@	.03
July-Sept.	.03⅛	@	.03¼
First Latex, crepe spot	.03⅞	@	.04
Amber Crepe No. 2	—	@	.03
Amber Crepe, No. 3	—	@	.02⅞
Amber Crepe, No. 4	—	@	.02¾
Brown Crepe, Clean thin	—	@	.02⅞
Brown Crepe, rolled	—	@	.02¾
Liquid Latex, per gal.	.70	@	.75
Paras—			
Up-river, fine	—	@	.05
Up-river, coarse	Nominal		
Acre Bolivian, fine	—	@	.05½
Caucho Ball, Upper	.02½	@	.03
Centrals—			
Central scrap	.04	@	—
Esmeraldas	.04	@	—
Balata—			
Block, Ciudad	—	@	.18

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
April	1⅝	@	1⅞d
May	1⅞	@	2d
June	1⅞	@	2d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	1½	@	1⅝d

Daily closing prices and sales on the Rubber Exchange of New York are given in the table below:

Reclaimed Rubber

No change was reported in the price on standard reclaimed grades during the fortnight. Reclaimed rubber is apparently selling on its own merits irrespective of the low price levels for crude grades. The drop in consumption of reclaimed is due more to the general restriction in production of rubber goods than the substitution of crude for reclaim. Latest prices follow:

High Tensile				
Super-Reclaim Black	lb.	.05	@	.05¼
High Tensile Red	lb.	.05	@	.05¼
Shoe				
Unwashed	lb.	.05	@	.05¼
Washed	lb.	.05¾	@	.06
Tube				
No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04¾	@	.05
Tires				
Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05½	@	.06
White	lb.	.05½	@	.05¾
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½
Miscellaneous				
Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

There has been no change in price levels on scrap rubber grades during the last two weeks. Accumulations are reported to be more difficult in view of the continued low prices but a demand still comes from the reclaimers in encouraging volume, under the circumstances. Late prices to consumers follow:

(Prices to Consumer)

Auto tire peelings	ton	18.00	@	20.00
Mixed auto	ton	7.50	@	8.75
Bicycle tires	ton	5.00	@	6.00
Clean solid truck tires	ton	24.00	@	26.50
Boots and shoes	ton	15.00	@	17.50
Arctics, untrimmed	ton	10.00	@	12.50
Inner tubes, No. 1	lb.	.02⅝	@	.02⅞
Inner tubes, No. 2, compounded	lb.	.01⅝	@	.01½
Inner Tubes, Red	cwt.	1.40	@	1.50
Air Brake Hose	ton	9.00	@	10.00
Rubber Hose	ton	8.50	@	9.00

Cotton

RAW cotton took a decided drop over the past two weeks, going to below the 6 cent level on new record lows for April spot. The market has been further influenced by bearish reports from the textile industry and a protracted quiet spell in the trading centers. Mills find it increasingly difficult to turn out finished goods at a profit at prevailing textile prices.

High, low and closing prices on the New York Cotton Exchange, as of April 20, were as follows:

	High Apr. 20	Low Apr. 20	Close Apr. 20	Close Apr. 5
April			6.08	6.10
May	6.13	5.99	6.11	6.16
July	6.30	6.18	6.30	6.31

Tire Fabrics

It is a little early to see any effect of the low raw cotton prices on the prices for tire fabrics and practically no change in price levels on the various standard fabric constructions have been reported over the last two weeks. Latest quotations follow:

(Prices Net at the Mill)

CORD				
Peeler, carded, 23/4/3	lb.	.24	@	.24¼
Peeler, carded, 23/5/3	lb.	.23	@	.23¼
Peeler, carded, 13/3/3	lb.	.20	@	.20¼
Peeler, carded, 15/3/3	lb.	.21	@	.21¼
Egyptian, carded, 23/5/3	lb.	.35	@	.35½
Egyptian, combed, 23/5/3	lb.	.40	@	.40½
CHAFERS				
Carded, American, 8 oz.	lb.	.18	@	.19
Carded, American, 10 oz.	lb.	.18	@	.19
Carded, American, 12 oz.	lb.	.18	@	.19
Carded, American, 14 oz.	lb.	.17	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.22
Carded, American, 10¼ oz.	lb.	.18	@	.22
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.23	@	.24
Carded, American, 17¼ oz. 10 ply	lb.	.17	@	.17½

Sheetings

Little buying interest has been manifested in the sheeting market over the last two weeks and no change in prices on important constructions has been reported. Late prices follow:

40-inch, 2.50-yard	yd.	.05⅝	@	.05¾
40-inch, 2.85-yard	yd.	.05¼	@	.05½
40-inch, 3.15-yard	yd.	.03⅝	@	.03½
40-inch, 3.60-yard	yd.	—	@	.04¾
40-inch, 3.75-yard	yd.	—	@	.04¼
40-inch, 4.25-yard	yd.	—	@	.03¾

Ducks

Lack of interest in the duck lines has kept prices at previous levels during the last two weeks. Latest quotations follow:

Enameling	lb.	.16¾	@	.17¾
Belting and Hose	lb.	.18	@	.18½
Single filling	lb.	.08	@	.08¼
Double filling	lb.	.09½	@	.09¾

Closing Prices on Rubber Exchange of New York, Inc.

No. 1 Standard Contract of 10 Tons

FROM APRIL 6 TO APRIL 20, 1932

		Spot	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales
April	6	3.00	2.99	3.04	3.07	3.10	3.14	3.19	3.25	3.30	3.36	3.43	3.52	3.60	66
	7	2.98	2.95	2.98	3.00	3.03	3.07	3.12	3.17	3.22	3.26	3.34	3.42	3.50	87
	8	2.98	2.94	2.97	2.99	3.02	3.07	3.13	3.18	3.22	3.26	3.33	3.40	3.46	140
	9	3.00	2.96	2.99	3.01	3.04	3.09	3.14	3.19	3.24	3.29	3.36	3.43	3.49	15
	11	3.06	3.00	3.04	3.07	3.10	3.14	3.18	3.25	3.31	3.38	3.44	3.50	3.55	13
	12	3.10	3.03	3.07	3.12	3.17	3.21	3.25	3.30	3.25	3.41	3.47	3.53	3.60	32
	13	3.03	2.98	3.02	3.05	3.09	3.13	3.17	3.22	3.27	3.32	3.38	3.44	3.50	32
	14	3.00	2.94	2.98	3.01	3.05	3.10	3.15	3.21	3.26	3.31	3.37	3.43	3.50	15
	15	2.95	2.94	2.98	3.01	3.05	3.10	3.15	3.22	3.28	3.34	3.40	3.45	3.51	22
	16	3.00	2.95	2.99	3.03	3.07	3.12	3.18	3.24	3.29	3.35	3.41	3.46	3.51	18
	18	2.95	2.93	2.97	3.00	3.03	3.09	3.16	3.21	3.26	3.31	3.37	3.42	3.48	36
	19	3.00	2.96	3.00	3.03	3.07	3.11	3.16	3.21	3.26	3.31	3.36	3.41	3.46	81
	20	3.00	2.96	3.00	3.03	3.07	3.11	3.16	3.22	3.28	3.34	3.40	3.46	3.53	38

CHEMICALS

NO appreciable change in the chemical situation has taken place over the last two weeks. The larger tire plants continue to operate on reduced schedules but it is reported that some of the smaller tire, mechanical goods and insulated wire plants are fairly busy. Several leading chemical houses report that the day of the ton lot order on materials has, temporarily at least, been superceded by the 100 pound order. Quotations follow:

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.57	@	.61
A-16	lb.	.58	@	.62
A-19	lb.	.64	@	.68
A-20	lb.	.80	@	.95
A-32	lb.	.65	@	.70
Aldehyde ammonia, crystals	lb.			
Altax	lb.			
Captax	lb.	.55	@	.65
Crylene	lb.	.45	@	.55
paste	lb.	.42	@	.44½
Di-Ortho-Tolyguanidine	lb.	.30	@	.32½
Diphenylguanidine	lb.	.45	@	.47½
Ethylidene aniline	lb.	.37½	@	.40
Formaldehyde aniline	lb.	.40	@	—
Heptene	lb.	.58½	@	.61
Hexamethylene-tetramine	lb.	.18	@	.20
Lithex	lb.	.37½	@	.40
Methylenedianiline	lb.	3.25	@	--
Monex	lb.	.68	@	.80
Oxynone	lb.	.50	@	.55
Phenex	lb.	.40	@	.41
R & H 40	lb.	.40	@	.41
R & H 50	lb.	.75	@	.76
R & H 397	lb.	1.95	@	2.15
R-2	lb.	1.20	@	1.25
Safex	lb.	.75	@	—
SPDX	lb.			
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Tensilac, No. 39	lb.	.40	@	.42½
Tensilac, No. 41	lb.	.50	@	.52½
Thermic F	lb.	.50	@	.55
Thiocarbanilid, drums	lb.	.20	@	.22
TMTT	lb.	3.00	@	3.25
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.60
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z-88-P	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	—
Lead, white	lb.	.08½	@	.08¾
Litharge, domestic	lb.	.06¼	@	.07
Magnesia, calcined,				
light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	5.65	@	5.75

COLORS

Blacks (See Compounding Materials)

Blues				
Prussian	lb.	.35	@	.36
Ultramarine	lb.	.06	@	.32
Browns				
Sienna, Italian	lb.	.05½	@	.12½
Umber, Turkey	lb.	.04½	@	.07
Greens				
Chrome, light	lb.	.30	@	.32
medium	lb.	.31	@	.33
dark	lb.	.34	@	.36
Chromium Oxide, bbl.	lb.	.34½	@	.35½
Reds				
Antimony				
crimson, 15/17	lb.	.40	@	.44
sulfur, free	lb.	.56	@	.66
golden, 15/17 F.S.	lb.	.20	@	.25
Indian English	lb.	.08	@	.11
Domestic (Maroon)	lb.	.11	@	—
Red oxide, pure	lb.	.10	@	.12
Rub-Er-Red, f.o.b.Easton	lb.	.08¾	@	—
Whites				
Lithopone, Albalith	lb.	.04½	@	.04¾
Lithopone, Azolith	lb.	.04½	@	.04¾
Titanium oxide	lb.	.21	@	—
Titanox B	lb.	.06½	@	.07
Titanox C	lb.	.06½	@	.07
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.05¾	@	.06
ZZ (leaded)	lb.	.05½	@	.05¾
Horsehead Lead Free Brand:				
Selected	lb.	.05¾	@	.06
Special	lb.	.05¾	@	.06
XX Red	lb.	.05¾	@	.06
XX	lb.	.05¾	@	.06
XX Green	lb.	.05¾	@	.06
Leaded Brand, Standard	lb.	.05½	@	.05¾
Sterling	lb.	.05½	@	.05¾
Superior	lb.	.05½	@	.05¾
Lehigh	lb.	.05¼	@	.05½
U. S. P., bbls.	lb.	—	@	.12¾
Kadox, black label	lb.	.09⅝	@	.09⅞
Blue label	lb.	.08⅝	@	.08⅞
Red label	lb.	.07¼	@	.07½
Cryptone, No. 19	lb.	.06½	@	.06¾
Cryptone CB, No. 21	lb.	.06½	@	.06¾
XX Zinc Sulphide, bbls.	lb.	—	@	.13
St. Joe, black label	lb.	.05¾	@	.06
green label	lb.	.05¾	@	.06
red label	lb.	.05¾	@	.06
Zinc Oxide—French Process				
Anaconda, lead free	lb.	.05¾	@	.06
Anaconda, selected lead free	lb.	.06¼	@	.06½
Florence White seal, bbls.	lb.	—	@	.10⅞
Green seal	lb.	.09⅝	@	.09⅞
Red seal	lb.	.08⅝	@	.08⅞
Yellows				
Chrome	lb.	.16½	@	.17
Ocher, domestic	lb.	.01⅝	@	.02

BLACKS

Arrow "Aerfloted"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. work, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
Bone, powdered	lb.	.05½	@	.12½
Carbon, compressed	lb.	.03	@	.07
uncompressed	lb.	.03	@	.07
"Certified," Cabot				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
"Disperso" f.o.b. La.	lb.	.031	@	.071
f.o.b. Texas	lb.	.03	@	.07
Drop, bbls.	lb.	.05½	@	.14
"Excello," compressed	lb.	.04	@	.08
"Fumonex"	lb.	.02½	@	.06
"Gastex"	lb.	.02½	@	.06
Lampblack	lb.	.07	@	.10
"Micronex"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
"Supreme"	lb.	.03	@	.07
Thermatomic—"P 33"	lb.	—		—
"Thermax"	lb.	—		—
United, "Dixie" and "Kosmos"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
"Velvetex"	lb.	.02	@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.10½	@	.12
Asbestine	ton	13.40	@	14.00
Barium carbonate	ton	56.50	@	57.00
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	33.00	@	—
Basofor	lb.	.04½	@	—
Bentonite	lb.	.02	@	.03
Blanc fixe dry f.o.b. works	ton	75.00	@	90.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk, precipitated				
Suprex white, extra lt.	ton	60.00	@	70.00
heavy	ton	45.00	@	55.00
Clay, Kaolin, domestic	ton	8.00	@	9.00
Aerfloted, Suprex	ton	6.50	@	8.00
Congaree	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	10.00	@	22.00
Par	ton			
Tensulite		15.00	@	—
Glues, extra white	lb.	.20	@	.25
medium white	lb.	.16	@	.20
Kalite No. 1	ton	30.00	@	60.00
Kalite No. 3	ton	40.00	@	70.00
Magnesia, carbonate	lb.	.08¾	@	.11
Mica	lb.	.04½	@	—
Rotten Stone (powdered)	lb.	.02	@	.05
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	—	@	2.57
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	1.70
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.09½	@	.10½
Zinc Stearate	lb.	.18½	@	.22

MINERAL RUBBER

Genasco (factory	ton	40.00	@	42.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Parmr, solid	ton	28.00	@	48.00
Pioneer. MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hydro-Carbon	ton	27.05	@	29.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66 degrees	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	—	@	.26½
Acids, Fatty				
Laurex	lb.	.15	@	.16
Stearex	lb.	.13	@	.17
Stearic, double pressed	lb.	.17	@	.22
Alkalies				
Caustic soda, 76%	cwt.	2.90	@	—
Soda ash, 58% C.L.	cwt.	1.17½	@	—
Oils				
Corn, refined, bbls.	lb.	.07	@	.08¾
Cottonseed, crule		—	@	.04½
Cycline	gal.	.27	@	.34
Degras (c.l. 100 bbls.)	lb.	.03¾	@	—
Less c.l. (10-25 bbls.)	lb.	.04	@	—
Lots less than 10 bbls.	lb.	.04¼	@	.04½
Fluxrite	lb.	.05½	@	.06½
Palm Lagos	lb.	.04	@	.05
Niger	lb.	.03½	@	.04
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.18	@	.23
Pine, steam distilled	gal.	.54	@	.61
destructively distilled	gal.	.54	@	.55
Witco Palm Oil	lb.	.07½	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	7.00	@	—
Rosin, grade K, 280 lb.	bbl.	—	@	4.60
Pigmentar	gal.	.18	@	.23
Tar Retort, 50 gal.	bbl.	13.50	@	15.00
Solvents				
Acetone, pure	lb.	—	@	.10
Alcohol, denatured,				
No. 1 bbls.	gal.	.28	@	.29
Benzol, 90%	gal.	.20	@	.21
Carbon, bisulfide	lb.	.05½	@	.06⅛
Carbon, tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.26	@	.28
Rub-Sol (f.o.b. Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	—	@	.37¼
wood	gal.	—	@	.40
destructively distilled	gal.	.35	@	—
Waxes				
Beeswax, white	lb.	.34	@	.36
Carnauba	lb.	.26	@	.28
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.06½	@	.07
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Paraffin (c.l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.02½	@	—
White crude scale 124/126	lb.	.02½	@	—
Refned, 125/127	lb.	.03⅝	@	—
Refined, 128/130	lb.	.03¾	@	—
Refined, 135/137	lb.	.05½	@	—
Refined, 138/140	lb.	.07¼	@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.			
Powder	lb.			
Resin	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Retardex	lb.	.35	@	.40
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.66

SPECIALTIES

Aromatics—Rodo	lb.			
Sunproof	lb.	.35	@	.37½
Sponge Paste	lb.	—	@	.30
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.07	@	.09
White	lb.	.08	@	.14
Brown	lb.	.07	@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½	@	.04½
Sulfur flour,				
Ref'n'd, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags	cwt.	1.75	@	2.10
Telloy	lb.			
Vandex	lb.			

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